103

NEED TO REFORM U.S. EXPORT CONTROLS

Y 4.F 76/1:EX 7/29

Need to Reform U.S. Export Controls... GS

AND

MARKUP

ON

H.R. 2343

The Forest Resources Conservation and Shortage Relief Amendments of 1993

BEFORE THE

SUBCOMMITTEE ON
ECONOMIC POLICY, TRADE AND ENVIRONMENT

OF THE

COMMITTEE ON FOREIGN AFFAIRS
HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRD CONGRESS

FIRST SESSION

JUNE 9 AND 23, 1993

Printed for the use of the Committee on Foreign Affairs

DEC 13 1993

U.S. GOVERNMENT PRINTING OFFICE
71–435 CC WASHINGTON : 1993

For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402
ISBN 0-16-041703-1

3

NEED TO REFORM U.S. EXPORT CONTROLS

Y 4.F 76/1:EX 7/29

Need to Reform U.S. Export Controls... GS

AND

MARKUP

ON

H.R. 2343

The Forest Resources Conservation and Shortage Relief Amendments of 1993

BEFORE THE

SUBCOMMITTEE ON
ECONOMIC POLICY, TRADE AND ENVIRONMENT

OF THE

COMMITTEE ON FOREIGN AFFAIRS
HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRD CONGRESS

FIRST SESSION

JUNE 9 AND 23, 1993

Printed for the use of the Committee on Foreign Affairs

DEC 13 1993

U.S. GOVERNMENT PRINTING OFFICE
71–435 CC WASHINGTON : 1993

For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402
ISBN 0-16-041703-1

COMMITTEE ON FOREIGN AFFAIRS

LEE H. HAMILTON, Indiana, *Chairman*

SAM GEJDENSON, Connecticut
TOM LANTOS, California
ROBERT G. TORRICELLI, New Jersey
HOWARD L. BERMAN, California
GARY L. ACKERMAN, New York
HARRY JOHNSTON, Florida
ELIOT L. ENGEL, New York
ENI F.H. FALEOMAVAEGA, American Samoa
JAMES L. OBERSTAR, Minnesota
CHARLES E. SCHUMER, New York
MATTHEW G. MARTINEZ, California
ROBERT A. BORSKI, Pennsylvania
DONALD M. PAYNE, New Jersey
ROBERT E. ANDREWS, New Jersey
ROBERT MENENDEZ, New Jersey
SHERROD BROWN, Ohio
CYNTHIA A. McKINNEY, Georgia
MARIA CANTWELL, Washington
ALCEE L. HASTINGS, Florida
ERIC FINGERHUT, Ohio
PETER DEUTSCH, Florida
ALBERT RUSSELL WYNN, Maryland
DON EDWARDS, California
FRANK McCLOSKEY, Indiana
THOMAS C. SAWYER, Ohio
(Vacancy)

BENJAMIN A. GILMAN, New York
WILLIAM F. GOODLING, Pennsylvania
JAMES A. LEACH, Iowa
TOBY ROTH, Wisconsin
OLYMPIA J. SNOWE, Maine
HENRY J. HYDE, Illinois
DOUG BEREUTER, Nebraska
CHRISTOPHER H. SMITH, New Jersey
DAN BURTON, Indiana
JAN MEYERS, Kansas
ELTON GALLEGLY, California
ILEANA ROS-LEHTINEN, Florida
CASS BALLENGER, North Carolina
DANA ROHRABACHER, California
DAVID A. LEVY, New York
DONALD A. MANZULLO, Illinois
LINCOLN DIAZ-BALART, Florida
EDWARD R. ROYCE, California

Michael H. Van Dusen, *Chief of Staff*
Richard J. Garon, *Minority Chief of Staff*
Anne Grey, *Staff Associate*

Subcommittee on Economic Policy, Trade and Environment

SAM GEJDENSON, Connecticut, *Chairman*

JAMES L. OBERSTAR, Minnesota
CYNTHIA A. McKINNEY, Georgia
MARIA CANTWELL, Washington
ERIC FINGERHUT, Ohio
ALBERT RUSSELL WYNN, Maryland
HARRY JOHNSTON, Florida
ELIOT L. ENGEL, New York
CHARLES E. SCHUMER, New York

TOBY ROTH, Wisconsin
DONALD A. MANZULLO, Illinois
DOUG BEREUTER, Nebraska
JAN MEYERS, Kansas
CASS BALLENGER, North Carolina
DANA ROHRABACHER, California

John Scheibel, *Staff Director*
Edmund B. Rice, *Republican Professional Staff Member*
Kathleen Bertelsen, *Professional Staff Member*
Donna La Torre, *Professional Staff Member*
Peter Yeo, *Professional Staff Member*

CONTENTS

JUNE 9, 1993

Page
Markup of the Forest Resources Conservation and Shortage Relief Act 1

WITNESSES

JUNE 9, 1993

Gregory N. Hughes, president, AT&T Transmission Systems 9
Tim Dwyer, vice president and general manager of Intercontinental Operations, Sun Microsystems, Inc., on behalf of the American Electronics Association; accompanied by John Gage, director, the Science Office, Sun Microsystems Laboratories 13
Janne Nolan, senior fellow, Brookings Institution 33
Benjamin H. Flowe, Jr., partner, Verner, Liipfert, Berhard, McPherson and Hand, representing the Center for Strategic and International Studies 37

WITNESSES

JUNE 23, 1993

Roland W. Schmitt, Ph.D., president, Rensselaer Polytechnic Institute 47
William F. Burns, major general, U.S. Army (retired), former director, Arms Control and Disarmament Agency 50
John D. Steinbruner, Ph.D., director, of Foreign Policy Studies, The Brookings Institution 53
Jerry J. Jasinowski, president, National Association of Manufacturers, accompanied by Chris Padilla, general manager, Federal Government Relations, AT&T, and Howard Lewis, vice president for International Affairs, National Association of Manufactures 72

APPENDIX

JUNE 9, 1993

Prepared statements:
- Hon. Sam Gejdenson 83
- Hon. Anna Eshoo 86
- Gregory N. Hughes 87
- Tim Dwyer and John Gage 93
- Janne Nolan 102
- Benjamin H. Flowe 113

JUNE 23, 1993

Prepared statements:
- Hon. Sam Gejdenson 157
- Roland W. Schmitt and William F. Burns 159
- John Steinbruner 185
- Jerry J. Jasinowski 196
- H.R. 2343, reprint of 205

MARKUP OF THE FOREST RESOURCES CONSERVATION AND SHORTAGE RELIEF AMENDMENTS OF 1993

WEDNESDAY, JUNE 9, 1993

House of Representatives,
Committee on Foreign Affairs,
Subcommittee on Economic Policy,
Trade and Environment,
Washington, DC.

The committee met, pursuant to notice at 1:29 p.m., in room 2172, Rayburn House Office Building, Hon. Sam Gejdenson (chairman of the subcommittee) presiding.

Mr. Gejdenson. The subcommittee will come to order. Before we begin today's hearing on export controls, the subcommittee will mark up legislation relating to log exports. In 1990, the Foreign Affairs Committee approved legislation which was signed into law to limit the export of timber from state lands. This legislation was necessary to relieve the shortage of unprocessed timber in the Pacific Northwest available for domestic milling operations.

One month ago the U.S. Court of Appeals for the Ninth Circuit ruled the 1990 law was unconstitutional. The court did not conclude that Congress lacked the power to restrict the export of timber from state lands. Rather, the court held that under the Tenth Amendment, the Congress could not require a state to administer a program restricting exports.

The legislation before the subcommittee today introduced by Representative Jolene Unsoeld resolves the constitutional issues which caused the 1990 law to be overturned.

I would now like to turn to Representative Maria Cantwell who is shepherding this legislation through the Foreign Affairs Committee for a brief explanation of the bill.

Ms. Cantwell. Thank you, Mr. Chairman. On behalf of the entire Northwest Delegation I would like to commend you for this markup and your speedy explanation of the process we're going through. [Laughter.]

Ms. Cantwell. I know you will take more time with the Export Control Act today.

The issue before us is a pressing matter for us in the Pacific Northwest. The recent Ninth District Court ruling has put about many jobs, approximately over 6,000 jobs in Washington State at risk. These families in Washington timber communities may face the prospect of mills closing down and unemployment if we do not take quick action.

The Northwest Delegation in a bipartisan effort has come together to try to improve upon the legislation that was passed in 1990. Let me take a few minutes to describe exactly why we arrived at this point.

In 1990, Congress responding to the tremendous need to protect the supply of logs to domestic mills and save American jobs passed legislation banning the export of logs from state and public lands. As the biggest state timberland owner in the country, almost 50 percent of all state-owned timberland in the nation is owned by the State of Washington and also as the biggest exporter of raw logs, we have been the state most affected by this legislation.

On May 4th of this year, the Ninth Circuit Court of Appeals while affirming Congress' authority to restrict the export of logs ruled that part of the law was unconstitutional based on the Tenth Amendment to the U.S. Constitution. The Tenth Amendment provides that powers not delegated to the United States are prohibited to the states or reserved to the states or to the people. Generally when Congress passes a Federal law under an established power in the case of log exports the power to regulate commerce, the Tenth Amendment is not implicated.

The Ninth Circuit Court, however, found that the 1990 law directs the states to administer certain aspects of timber export programs. Requiring states by law to affirmatively issue regulations, administer Federal laws are among the powers denied to the Federal Government. For this reason the law was declared unconstitutional.

The bill before us today is constitutionally sound. To ban the export of unprocessed timber from state lands and will accomplish that without allowing any gaps in new contracts. The legislation includes a Federal restriction on state log exports but gives the states the option of establishing their own regulatory program to implement the ban. If a state declines to act, a Federal regulatory program would apply.

This is the status quo fix to the crisis in Washington State. The bill only reinstates current law as it existed before the May 4th court decision. It does not introduce new ideas. It does not attempt to go further than the current law nor will it affect the export of privately owned timber. The bill simply gives the states the authority to design their own program prohibiting the export of unprocessed public timber, but does not mandate it. Again, a Federal program would only be instituted if a state failed to adopt and enforce the program.

This legislation is broadly supported in a bipartisan fashion throughout the Pacific Northwest, a wide range of co-sponsors from Washington, Oregon and from other states, California, Montana.

Finally, it is important to point out that we have a written commitment from our governor of Washington, that he is ready to act in reestablishing the current state program as soon as possible. With this commitment, the final result will be maintaining our status quo process in Washington State.

I urge my colleagues to support this bill and I would again like to thank the chairman and his staff and the Ranking Members and their staff for the opportunity to bring this legislation before us today.

Mr. GEJDENSON. Thank you, Ms. Cantwell.

The gentleman from Wisconsin.

Mr. ROTH. Yes, Mr. Chairman, I appreciate Ms. Cantwell's explanation of the bill and we want to also congratulate her on the interest that she has on this issue.

Mr. Chairman, I do have a couple of questions I would like to ask you for the record. And that is, this bill is intended to overcome a constitutional problem that the log export legislation that we passed in 1990 is to correct. Is that right?

Mr. GEJDENSON. Yes, that is correct.

Mr. ROTH. I understand that this applies primarily to the Pacific Northwest and in particular the State of Washington and it applies only to public lands. Is that accurate?

Mr. GEJDENSON. That is correct.

Mr. ROTH. And the governor of Washington is on board?

Mr. GEJDENSON. That is correct.

Mr. ROTH. I understand that there is a consensus of support among the timber industry interests in that state. Is that your understanding?

Mr. GEJDENSON. Yes, that's correct.

Mr. ROTH. Is it fair to say that given the recent court ruling unless we pass this legislation there will not be a sound legal basis for managing the timber resources on the public lands in the State of Washington.

Mr. GEJDENSON. As always, the gentleman has come to the proper and correct conclusion. At least most of the time, if not always.

Mr. ROTH. Thank you, Mr. Chairman, and again I appreciate your expeditious action here and want to again thank Ms. Cantwell for her excellent explanation in shepherding this bill thus far.

Mr. GEJDENSON. Someday we hope to be able to do the same for Darion, Wisconsin.

Mr. ROTH. We should live that long.

Mr. GEJDENSON. We will now consider H.R. 2343. Will the staff director please read the legislation.

The CLERK. To amend the Forest Resources Conservation and Shortage——

Mr. GEJDENSON. Move the bill be considered as read.

Without objection any further reading of the bill will be dispensed with and it will be printed in the record.

[H.R. 2343 appears in the appendix.]

Mr. GEJDENSON. Are there any amendments to the bill? If not—the gentleman has not got a copy of the bill? Gentleman, the bill is in the folder.

Mr. MANZULLO. There is no folder here.

Mr. GEJDENSON. No folder on that gentleman's desk.

[Pause.]

Mr. MANZULLO. I have a copy of the bill.

Mr. GEJDENSON. Are there any questions? Amendments?

[No response.]

Mr. GEJDENSON. If not, all those in favor, signify by saying, "Aye."

[A chorus of ayes.]

Mr. GEJDENSON. All those opposed, say, "Nay."

[A chorus of noes.]

Mr. GEJDENSON. The ayes have it; the bill is passed.

[Whereupon, at 2:03 p.m., the subcommittee adjourned, subject to the call of the chair.]

PROBLEMS OF U.S. EXPORT CONTROLS

WEDNESDAY, JUNE 9, 1993

House of Representatives,
Committee on Foreign Affairs,
Subcommittee on Economic Policy,
Trade and Environment,
Washington, DC.

The committee met, pursuant to notice, at 2:03 p.m., in room 2172, Rayburn House Office Building, Hon. Sam Gejdenson (chairman of the subcommittee) presiding.

Mr. Gejdenson. The committee will now begin the hearing that frankly I have been looking forward to for some time, and I think most of the members here will find it quite informative.

This is the first in a series of hearings to assist the committee in the total rewrite of the Export Administration Act.

As we begin this process, one fact is evident: The present system of export controls is broken. It serves neither our national security interests nor our economic interests.

The United States and its allies are attempting to control items for missiles and nuclear nonproliferation purposes. However, there is no common understanding of who we are trying to keep the technologies away from and little agreement on the criteria for approving or denying such export licenses.

As a result, these nonproliferation export control regimes are seriously impaired. One example of the failure of the current system is that we do not even have a multilateral agreement among our closest allies to keep missile technology away from Iran. If we cannot get an agreement among the G–7 nations to keep such potential technology out of the hands of one of the most dangerous countries in the world, we must reassess the entire system of export controls. The potential for controlling biological and chemical weapons is even less certain.

U.S. economic interests are also suffering at the hands of an outdated export control system. Advances in technology have outstripped much of our ability to control dual use equipment. Much of what we are making is too small, too good, and too commonly available for us to have any realistic expectation of keeping it out of the hands of dangerous countries.

Today's hearing will demonstrate that the U.S. Government is attempting to control telecommunications and computer products that are easily obtained from sources outside of the control of U.S. or the multilateral regimes that the United States is part of. In one very notable case involving telecommunications, the items we are now trying to control are being manufactured in one of the countries to which we are denying such technologies. In another case, we find that computer technology is available overseas at a level far in excess of the threshold of control. Thus our ability to successfully restrict exports may be quite limited.

The subcommittee recently obtained some very revealing information from the administration. We learned that computers and telecommunications equipment represent 88 percent of the value of all controlled U.S. exports. If, as today's witnesses will show, much of this technology is available outside the control regimes, we must question whether the U.S. export controls are restricting the sale of truly critical technologies.

The task before us is to reform the export control system to achieve several objectives:

We must increase the multilateralism and therefore the effectiveness of export control regimes in order to successfully control sensitive technologies. The restriction must be multilateral. If the United States is the only country, of the many countries that have these technologies, to control exports, it simply means that the purchasers of this equipment will go to other nations. Our controls do not deprive them of having access to these technologies.

In order to achieve the necessary multilateralism, we must have commonality in identifying the countries which are the targets of such controls and we must have criteria for export licenses.

In order to get the cooperation needed from our allies to make such controls multilateral, we must limit the controls to items that are truly sensitive and which we can realistically control. In recent years, we have seen 30-year-old computers restricted for export to Vietnam not because of any problems with proliferation but simply because of our old anger and battle with the Vietnamese Government.

We must distinguish between the treatment of country groups. We must give highly preferential treatment to countries that participate in and are members in good standing in export control regimes. We should also impose serious uniform restrictions on high tech exports to terrorist countries, and we have to work to make sure that these are multilateral.

We must recognize that China and the republics of the former Soviet Union represent extraordinary challenges. They are targets for some export control regimes and yet no nonproliferation export control regime can succeed without their active participation because in many instances they possess some of the most modern and potentially devastating technologies.

The export licensing system must be reformed to produce expedient processing of licensing applications. The endless discussions within the U.S. Government that result in months of nondecisions and that often lead to foreign sales successes must stop.

We would hope that this new administration would address these issues.

As in the past, the subcommittee will proceed in a bipartisan manner to deal with these difficulties. We also anticipate having a close and cooperative working relationship with the administration throughout the process of rewriting the Export Administration Act.

Mr. Roth.

Mr. ROTH. Thank you, Mr. Chairman.

I want to be brief but I do want to say that this is one of the most important bills as far as I am concerned, probably the most important bill to come through Congress this year, and we are going to pass an Export Administration Act.

Let me join you in welcoming the witnesses here today. Our goal is to completely rewrite the Export Administration Act, to bring it into the 20th Century and we realize that we are living in a new world, a new paradigm, and we have to adjust ourselves to this new paradigm if we are going to keep America competitive and that is why this legislation is so important.

Now, I want to tell my friend Mr. Manzullo, who always looks at the legislation in great detail, as all our members on this committee do, this is probably the most detailed, the most complicated piece of legislation you are going to see, so we want to work with you and make sure that we have all the nuances checked, as I know you will want to have.

But the old Export Administration Act is an artifact of the cold war. We want to send it down to the Smithsonian to show people how things were done in the past.

I also want to say that the chairman mentioned a bipartisan bill. This has got to be a bipartisan bill for two reasons: because we have to pass it, number one. But, secondly, nothing in Congress seems to work any more. These Democrats and Republicans cannot seem to work together. And that is why this bill has got to be a bipartisan bill and why we want to demonstrate that people of good will can work together and that we can put partisanship behind us and work and craft a good piece of legislation that is going to allow high technology companies to compete instead of watching sales slip away to other countries. And that we can support a broad coalition of the Congress in signing this legislation into law.

And this may be the first hearing but the chairman and I have been working on this issue for months. We have met with many CEOs in the area of high technology. We have contacted dozens of CEOs asking for their specific recommendations. So we have done a lot of homework behind the scenes in this legislation. We have sponsored a congressional seminar on export control issues for our new colleagues and their staffs and we are consulting with the leading scholars and experts in trade and nonproliferation fields so that we are well underway with this legislation.

And I can only hope that President Clinton fills the key policy job soon so we can start working with the administration on this bill because we are concerned about computers. We are concerned about telecommunications. We are concerned about nonproliferation. And, yes, we are concerned about national security.

So I am looking forward to your testimony as we move forward now in passing an EAA that we are all going to be very proud of.

Thank you, Mr. Chairman.

Mr. GEJDENSON. Mr. Ballenger.

Mr. BALLENGER. Thank you, Mr. Chairman.

You know, as economies around the globe become more interdependent U.S. high technologies industries, especially the electronic sector have become more and more dependent on international trade. In fact, more than 25 percent of the sales of the electronic industry are exports.

Furthermore, many sectors of the electronic industry, especially computers, are heavily dependent on export markets for their well being. These companies employ almost 2 million workers whose jobs are dependent on the export trade.

Similarly, as the international economic environment has changed, so has the technology development and evolution. While in the past export controls were able to address technology innovations in a reasonably timely manner, the current export control system is not able to effectively address the evolutionary cycles of a new technology.

In many cases, typical cyclical times for one generation of technology are 6 to 8 months and time is important in international markets.

Because of these factors, the American electronics industry is no longer able to operate on a level international playing field. This access to foreign customers is frequently threatened by actions of our Government who, while trying to address some of the legitimate concerns of protecting our national security severely hamper our companies' competitiveness.

In particular, the outdated and inefficient export licensing system has prevented our high technology electronics manufacturers from effectively getting their products to the customers. While these companies are required to provide their foreign customers with products in a predictable and timely manner, our Government does not provide the same service to U.S. companies. Instead, many companies face lengthy delays in licensing of their products that frequently result in lost sales.

A notable example is a computer manufacturer, Cray Research, who recently lost a sizable sale of technology to India. Due to the 3-year bureaucratic delay, the Indian Government was able to develop their own technology.

The principles of ACTT, accountability, consistency, transparency and timeliness, need to be recognized by our export control bureaucracy so that our companies can effectively plan their international activities.

In sum, the economic lifeblood of our company is at stake here. We must recognize the importance of two key items: one, the importance of exporting to our economic and national security and, second, the importance of a strong electronics industry as a competitive and global market. Only when our Government is able to aid our industry to meet these challenges of a new international marketplace will we be able to fully compete with other nations.

Thank you, Mr. Chairman.

Mr. GEJDENSON. Mr. Bereuter.

Mr. BEREUTER. Thank you, Mr. Chairman.

I look forward to the witness' testimony today. I commend the chairman and the ranking member for the work they have done in preparing us for the legislation that faces us once again.

I know that all members are concerned with finding the right balance between expanding our export base, high tech products and all products, while also taking proper cognizance of the national security interests. And I intend, to the extent I can be helpful, to provide a link through the intelligence committee to attempt to assure that we have the right information before us—but that the concerns of the intelligence community are not only related to members or provided to them directly but to assure that those concerns are realistic.

And I thank the chairman for the initiation here and look forward to the testimony.

Mr. GEJDENSON. Thank you.

And I would just say Mr. Bereuter served in that capacity in previous years and the committee has been grateful for his assistance.

Mr. Manzullo

Mr. MANZULLO. Thank you, Mr. Chairman.

I represent Winnebago County, Illinois which has 948 industries. Winnebago County is responsible for one-half of Illinois' exports that are manufactured in a county of only 259,000 people.

We have an aerospace industry there that is actively engaged in trying to promote its products overseas. We are faced with an incredible situation where there was a little hole added in a piece of metal on an aviation part and it ended up under dual use technology.

We look forward to listening to the testimony of those here and reading at length every line in the bill that will be finished so I can explain it in detail to my colleague from Wisconsin. We welcome you here.

I thank you very much.

Mr. GEJDENSON. We thank the members for their input and, again, as Mr. Roth indicated, this is a committee that has historically worked in a bipartisan effort to address this issue. We plan to continue to do so.

Today we have two distinguished panels. The first panel includes Mr. Greg Hughes, President of AT&T Transmission Systems; American Electronics Association represented by John Gage, Director of Sun Microsystems Laboratories, Inc., accompanied by Tim Dwyer, Vice President and General Manager of Intercontinental Operations, Sun Microsystems, Inc.

If you would please proceed in the order you have been introduced, starting with Mr. Hughes.

STATEMENT OF GREGORY N. HUGHES, PRESIDENT, AT&T TRANSMISSION SYSTEMS

Mr. HUGHES. Thank you, Mr. Chairman.

More than 50 years ago, the Soviet dictator Joseph Stalin vetoed a plan to modernize Russia's communications networks, saying of the telephone, and I quote, "I can think of no better instrument of counter-revolution."

Just a few months ago in Vancouver, the first democratically elected leader of Russia asked President Clinton to help him by removing restrictions on the sale of modern telephone equipment to his country.

The contrast could not be more striking than the comparison more illustrative.

In the information age, there are few things more important to political and economic development than modern, reliable telecommunications.

When Boris Yeltsin needed to communicate news from the Russian Parliament during the August 1991 coup, he relied on the fax machine.

When reform-minded protesters in Thailand were threatened by troops in Bangkok, they communicated by cellular phone.

When President Clinton identified open radio and T.V. broadcasts into China as a condition for renewing MFN trading, he underscored the role of communications in political reform.

With all of the evidence that telecommunications is good for democracy, one might think that exports of advanced telephone equipment to Russia and China would be permitted, even encouraged. But, in fact, restrictive rules on telecommunication exports still exist, left over from the cold war like a reminder of another age.

Of the 10 types of high technology still regulated by COCOM, telecommunications is the most tightly restricted. Equipments from fiberoptics transmission, software for digital telephone exchanges and cellular telephone gear are regulated as potential threats to U.S. national security.

Modern telephone networks do indeed pose a threat to the opponents of democracy. For years, it was said that the pen was mightier than the sword. Today, it is the fax machine that is mightier than the assault rifle and it is time to change the way we control telecommunications exports.

I head the AT&T business unit which designs, manufactures and markets transmission systems which move any kind of information, voice, video or data from any point to any other point anywhere in the world. We are the business unit that won the 1992 Malcolm Baldridge national quality award and we are proud of that and want to take that opportunity to improve the commerce of the United States through the excellence that we have in telecommunications.

There are few product areas which better illustrate the need for change in COCOM rules than fiberoptic transmission systems. These high speed fiberoptic networks are today's information superhighways, allowing more people to communicate more information more reliably at lower cost.

Fiberoptic cables have been allowed for export to China since the mid-1980's and to Russia since 1992. But cable laid in the ground is worthless without transmission equipment capable of sending information along those fibers.

Most such equipment in use today is on long distance routes and those routes in the United States can carry about 30,000 simultaneous phone calls over these hair thin pairs of fibers. COCOM rules limit transmission equipment for Russia and China to about 1900 simultaneous calls or 16 times less than the current technology. Allowing the construction of fiber networks but limiting the number of calls that can be carried over them is like helping Russia and China to build a 10-lane superhighway and then restricting its traffic to a few horse-drawn carriages.

Change in COCOM regulations has come slowly. So slowly, in fact, that controlled countries have developed their own advanced technologies and firms from countries which are not bound by COCOM rules now threaten to replace us, currently the leading market share company in China, with these high capacity transmission systems.

Let me give you a few examples.

These pictures that you see before you were taken on April 15, 1993 by AT&T engineers visiting a telephone network facility in Shanghai, China. They show a high-speed optical transmission terminal which was indigenously produced in China using commonly available components. It operates at 565 megabits per second and simultaneously transmit about 7600 telephone calls or roughly four times the current COCOM limit.

Our engineers noted that it was produced with the latest surface mount device technology such as that used in the most modern of AT&T's manufacturing facilities. This equipment has been in regular operation since January 6, 1993 on a 167-kilometer route between the eastern Chinese cities Shanghai and Wuxi.

And you can see on the chart of China showing the cities that are interconnected by these systems.

But even if controlled countries were not already making their own equipment, they could buy it legally from non-COCOM sources.

Earlier this year, one of our competitors based in Israel delivered six similar but more advanced fiberoptic terminals to two locations in China. In April, the same competitor signed a contract for 23 more systems to be delivered before the end of this year. Some of the equipment will be used on an 800-kilometer route between the cities of Nanjing and Wuhan. The equipment is the direct product of Israeli technology and the company has sold identical systems to many customers, including the national telephone companies of both Germany and France.

Although this equipment exceeds COCOM parameters, there is nothing illegal or improper in Israel selling it and nothing illegal or improper in China buying it. Israel is not a member of COCOM and is under no obligation to cooperate with its rules. Other non-COCOM countries such as India will soon be making similar equipment.

Yesterday, AT&T presented this information in greater detail to the Clinton administration in a foreign availability petition filed with the Department of Commerce. Our petition——

Mr. GEJDENSON. Can I interrupt you for one second?

Mr. HUGHES. Surely.

Mr. GEJDENSON. What is the rough value of one of these systems? Is that easily attainable? One of the ones like the Israelis just sold?

Mr. HUGHES. A rack of equipment floor to ceiling would be in the range of a quarter of a million U.S. dollars.

Mr. GEJDENSON. A quarter of a million dollars. If you were going to sell one of these systems to China right now at 565, you could not do it. You could not get a license.

Mr. HUGHES. We could not do it.

Mr. GEJDENSON. But it is available from other sources, including Israel, at the moment. They are outside of COCOM so there is no limit on their ability to sell it.

If you wanted to sell this system to Israel, could you just put it on a truck and sell it to Israel?

Mr. HUGHES. Yes.

Mr. GEJDENSON. You would not need a license.

Mr. HUGHES. That is correct.

Mr. GEJDENSON. So we can sell directly to Israel——

Mr. HUGHES. I am not saying that they do that.

Mr. GEJDENSON. No, no, no. I am just asking. But there is no need for a license to Israel. OK.

Mr. HUGHES. And it is also—and this equipment specifically in these photographs was designed, developed and manufactured in China by——

Mr. GEJDENSON. Actually, the staff says you would need a license to sell it to Israel so maybe you want to check with your guys. We think you would need the license.

Mr. HUGHES. OK. We would need a license but we believe we would have no difficulty in getting such a license.

Mr. GEJDENSON. Yes. We agree with that. You would get a license but there is a license process to export to Israel.

Mr. HUGHES. Yes, sir.

Mr. GEJDENSON. So, there is obviously no problem with the Chinese getting these systems now. Either they can make them themselves or they can buy them from the Israelis, but they cannot buy them from you.

Mr. HUGHES. That is correct.

Mr. GEJDENSON. OK.

Mr. MANZULLO. Mr. Chairman, I have a question.

Mr. Hughes, what is the policy reason for COCOM not allowing the intensity of those lines any more than what the present rules are?

Mr. HUGHES. I am sorry, sir. Could you say the part of that question——

Mr. MANZULLO. You stated that the COCOM rules only allow—was it 1900 phone calls per line?

Mr. HUGHES. Yes.

Mr. MANZULLO. And your lines can carry 30,000 phone calls.

Mr. HUGHES. Yes.

Mr. MANZULLO. Is there a policy decision behind what COCOM did? Is there any reason given for such a small limitation?

Mr. HUGHES. I think it is outdated technological rationale and that is the technology has improved and capabilities of non-COCOM countries and indigenous Chinese manufacturer. That rule has become outdated.

Mr. MANZULLO. You have undoubtedly tried to update that rule with COCOM?

Mr. HUGHES. We have, yes, argued and attempted to get changes in that and so far we have been unable to get changes in that. And this is the volume of information that is going through.

Mr. MANZULLO. That is why we are here, Mr. Hughes. We want to try to find out. Now, how long have you been trying to change that?

Mr. HUGHES. We have been trying for about 3 years.

Mr. MANZULLO. Three years. And this equipment that holds more lines is readily available from other countries that are not in COCOM. From Israel, for example.

Mr. HUGHES. That is correct. These are systems that operate at 622 megabits per second and the COCOM limit is 140 megabits per second or the 1900 voice conversations per pair of fibers.

Mr. MANZULLO. Mr. Hughes, thank you.

Mr. HUGHES. So yesterday we submitted this information in much greater detail to the Department of Commerce. Our petition which was accompanied by these photographs and 400 pages of supporting documentation shows that high sped, fiber optic gear is now available from non-COCOM sources and we would be happy to give any one of you a copy of that 400 page document with all of that documentation.

We hope that the Commerce Department will act quickly because in the competitive marketplace time is running short. AT&T will have lost $110 million in sales by the end of this year due to outdated export controls on transmission equipment and will lose an additional $50 million to $100 million annually through the end of the decade if controls are not removed. By then, annual worldwide purchases of this type of transmission equipment will have reached $5 billion and Russia and China will be two of the world's largest markets.

If COCOM rules continue to prevent AT&T from competing on equal terms in such large markets, our future revenue growth and ability to sustain employment levels will be at risk.

President Clinton can promote democracy and U.S. economic interests by seeking the elimination of all remaining export controls on telecommunications for civilian uses in Russia and China.

In 1990 and again in 1991, this committee passed legislation which would have required just that. We hope the new administration which is now conducting a policy review on COCOM will agree with Congress and industry on the need for major changes.

Mr. Chairman, more than a half century ago Joseph Stalin tried to limit the spread of modern telephone technology. Now at the dawn of a new age, it is time to change COCOM that is doing the same thing.

Thank you very much.

Mr. GEJDENSON. Thank you, sir.

[The prepared statement of Mr. Hughes appears in the appendix.]

Mr. Dwyer, I guess, will go next.

STATEMENT OF TIM DWYER, VICE PRESIDENT AND GENERAL MANAGER OF INTERCONTINENTAL OPERATIONS, SUN MICROSYSTEMS, INC. ON BEHALF OF THE AMERICAN ELECTRONICS ASSOCIATION; ACCOMPANIED BY JOHN GAGE, DIRECTOR, THE SCIENCE OFFICE, SUN MICROSYSTEMS LABORATORIES

Mr. DWYER. Mr. Chairman, members of the subcommittee, I am Tim Dwyer, Vice President of Sun Microsystems. Accompanying me is John Gage, director of our science office.

On behalf of the American Electronic Association, we appreciate this opportunity to testify about computer export controls before the House Foreign Affairs Subcommittee on Economic Policy, Trade and Environment.

I would like to have our written statement submitted for the record.

Mr. GEJDENSON. Without objection.

Mr. DWYER. Mr. Chairman, why we are here, the AEA represents 2.3 million employees, which is more than steel, automobile and aerospace industries combined in the United States.

Sun Microsystems has grown from zero dollars to $4 billion in 10 years and from 15 people to 13,000 employees during that time, all based on high technology. Fifty percent of our business comes from exports.

We are talking about export controls on computers today and this is what our policy is trying to control. What I would like to do is just off the record do a little dog and pony show.

Mr. GEJDENSON. Everything is on the record here but we do not mind dog and pony shows.

Mr. DWYER. This is, as you know, a Fed Ex package. And this is a supercomputer or pieces of it. Let me just show you very briefly what this is.

Mr. GEJDENSON. Maybe you could take Mr. Gage's mike and just point it straight up, it might catch your voice. Just bend it up a little, I think it might catch you.

Mr. DWYER. OK. Is that a little better?

Mr. GEJDENSON. Oh, here you go.

Mr. DWYER. OK. We will pass this board around a little later but this is basically a printed circuit board that holds the entire supercomputer except for some parts which I will plug in in a minute. And, as you know, exports are controlled by a thing called MTOPS and I will go through that with you in a minute.

When you get this, you will see that there is a section here for memory. And this is produced in Japan in Korea, so the Korean memory is openly available to anyone in the world. The Japanese memory is more controlled.

Then there is a series of chips all along here that are produced—in fact, some of them are produced in the PRC and others are produced in other countries around the world. So the chips themselves are openly available.

The printed circuit board technology is probably—this board may come from Malaysia, I do not know exactly which factory this one came from, but printed circuit board technology is widely available also.

So what Sun does is they do their design of this and they implement it and other countries like Korea and Taiwan also do their design of these boards and they implement them.

Now, this item used to take up an entire room and have a plumbing system in there to cool it and what have you. This is a 66 mega-TOPS CPU board. I stick it in my pocket, carry it on the plane, goodbye. It just plugs into the back of this and that is it. You have a 66 mega-TOPS system.

This is a two-CPU version which is now 132 mega TOPS. It is MTOPS.

Mr. GEJDENSON. This is on the market today?

Mr. DWYER. This is on the market today. This also plugs right into the back. It has the same little fitting on the back, so you can pull one out and you put the other one in. As of July 1st, we will have this board with these sets now also mounted on the back, so the 130-some-odd will become 260-some-odd.

So now the definition of a supercomputer is 190-some-odd MTOPS. We now will have a 260-MTOP computer. It all fits on this board. The parts are all available from around the world.

This board is the board that powers this computer, so what goes with this is a piece of plastic grounded, a computer monitor made by Sony, a keyboard, a CD-ROM over here and a disc drive and that is the sum total of that supercomputer. And Mr. Gage will talk about this a little bit more.

Mr. GEJDENSON. Let me just ask one quick question. What you are saying is that basically that is a 486 or a 586, the base of that computer?

Mr. DWYER. These are called SPARC Station 10's. We use SPARC chips. The 486—586 actually is a very comparable chip to this.

Mr. GEJDENSON. OK. So a 586, in the terminology that at least I am used to——

Mr. DWYER. Sure. That is fine.

Mr. GEJDENSON [continuing]. Computer is what we are looking at in the end.

Mr. DWYER. The 586, that has not come to market yet but that will come to market very shortly.

Mr. GEJDENSON. That is what we are looking at.

Mr. DWYER. Yes.

Mr. GEJDENSON. And then——

Mr. DWYER. What is the difference between these two?

Mr. GEJDENSON. By adding that card in, when you finish adding the double, the back, that will be faster than the standard for supercomputer export license.

Mr. DWYER. Yes. Once I put this double sided board in, that will be 260-some-odd MTOPS. And he is going to actually show this in a little bit here.

The only difference between this computer and this computer is basically the size of the storage in it. This is made for bigger commercial applications like banks, insurance companies and what have you. And this one, traders in the stock exchange and those types of people use these.

So I guess the question is why are we trying to control computers at all? These things are commodity items.

If the committee were to come away from this hearing with one message today, it should be this: U.S. export control policy is nurturing foreign competition by denying the U.S. computer industry access to foreign markets, markets that are open to our non-COCOM competitors.

U.S. export control policy cannot prevent or control the spread of technology. U.S. export control policy does not help the country's economic security. U.S. export control policy is not effective in protecting our national security.

How is this happening? Here are some of the major problems.

1. COCOM continues to require validated licenses for exports of personal computers, workstations and higher powered computers. This is incomprehensible, given that non-COCOM countries such as Taiwan, Korea, India and others make these same machines and

export them without the restrictions imposed by the United States and its allies. By the way, in Russia, for example, the users of these are oil and gas, manufacturers of trucks, new banks, universities and all parts of the military conversion program. They will either buy these from the United States or they will buy them from Korea and Taiwan.

Is this on? It sounds like this system is off. Is it?

Mr. GEJDENSON. We may need a better computer to run our system. [Laughter.]

Mr. GEJDENSON. It seems to be either off or dying.

Mr. DWYER. Do you want me to shout?

Mr. GEJDENSON. Try plugging in that other one. See if that works again.

Mr. DWYER. There we go. OK. Somebody does not want me to talk about this subject. OK.

2. Controls on exports of computers that the U.S. Government arbitrarily defines as supercomputers have exhausted high performance computer companies with onerous and costly conditions for export. Now these controls are going after lower level workstations and even personal computers that are increasing in power and bumping into and in fact overriding the supercomputer definition. The cost to the customer of comply with these conditions——

Mr. GEJDENSON. I think you can put down the hand-held and unplug it. The other one now works.

Mr. DWYER. Now we are back in business?

Mr. GEJDENSON. I think so.

Mr. DWYER. It sounds like it.

The cost to the customer to comply with these conditions could in some cases equal or exceed the price of the computer itself.

Just a personal experience of mine, I was in a bank and an insurance company in Hungary and they were subject to—they had this supercomputer definition type of material in there that was obtained from either the United States or one of the Western allies and when I tried to leave the place I could not get out. I had to go and find someone with a card. It had a locked room, 24-hour guard and it goes on and on and on.

So these computers, the one on the far end that I mentioned, roughly a 20-some-odd thousand dollar computer, might require $200,000, $300,000 a year of just controls to keep the computer under the right type of mandated controls.

Mr. GEJDENSON. Unless you bought it from somebody else.

Mr. DWYER. If you bought it from Korea and Taiwan, there is no problem. You might think about this as a customer. If I am talking to you about buying this and my Korean compatriot is sitting over there and we are selling fundamentally something very similar and he says I will deliver it tomorrow and I say fill in all this paperwork and I will get it to you in 3 months and, by the way, hire a guard and so on, you know who you are going to buy it from and we are going to be out of business.

3. The U.S. Government continues to unilaterally control computers for nuclear proliferation reasons in spite of a 27-nation international agreement not to control them. The United States was a party to this agreement and it appears to have changed its mind.

All this is happening at a time when the American computer industry is facing a challenging competitive environment. Over the past 2 years, the industry has seen sluggish sales and lower profits, a 10 percent reduction in workforce and a trade deficit increasing from $845 million to $5 billion over these last few years.

The Government's answer?

It is going again.

Mr. GEJDENSON. Maybe we should check with the Central Intelligence Agency. [Laughter.]

Mr. DWYER. The Government's answer? 1992 exports of computers required, as you mentioned earlier 8700 license applications for approval by the Government representing $10.2 billion worth of sales. That is more than one-third of all export licenses required by the Government and almost one-half the total value of exports requiring some form of license.

Potential lost sales from export controls are difficult to quantify but we do know that smaller companies are so daunted by the complexity of the regulations that they simply forego attempting to enter foreign markets. And there is also the example I gave earlier of why would they not buy from a Korean or Taiwanese company?

By the way, they are doing it very legitimately. There are no intellectual property problems here, there are no COCOM problems. It is just like Mr. Hughes mentioned in the telecommunications case.

The fact of the matter is that advanced computer technology rapidly becomes commodity and consumer technology. This is because the hardware, software and skill sets required to build and operate mid range machines diffuse easily throughout global markets. This inescapable fact renders export controls ineffective. All these people go to U.S. universities and they are mobile and they go all over the place.

Let me start this discussion with a brief overview of the export controls that the computer industry must deal with in its day-today operations and I will be brief on this part.

The United States and its COCOM allies currently require an export license for any computer operating above 12.5 MTOPS. This is not very high, as you know. This is the level of a very small personal computer, one that costs about $1,000 or $1,500. Anything below that is considered decontrolled. This rule has been out of date since it went into effect 2 years ago.

Meanwhile, many non-COCOM countries are now churning out systems in the 50 MTOPS range and above.

Mr. GEJDENSON. Fifty? Five-zero?

Mr. DWYER. Yes. Easily. And exports of these systems—that is some of them. I will get to the other ones in a minute here.

And exports of these systems do not require licenses from these governments. That is the key to the problem. They do not have the same controls as we do, if they have any at all. And I do not believe they will truly conform to COCOM controls, no matter how hard our Government tries.

I say this for two reasons: one, their economies are export driven. If they do not export, they remain underdeveloped countries. They put into practice the notion that economic security is vital to a country's national security and, two, they correctly believe that commodity level technology, which is what we are talking about or claiming to talk about here, is inherently uncontrollable. It moves quickly, broadly and anyone who really wants to get it can get it.

Let me turn briefly to the issue of supercomputer controls. Currently, our industry is subjected to two serious problems.

First, some time ago, the government decided that special supercomputer export controls should be imposed on machines that operate at 195 MTOPS. A computer at this level is a workstation that fits on or beside the desk, as I showed you before. Current true supercomputers operate at 20,000 MTOPS, so the regulation is at 195 and current supercomputers are at 20,000 which is 100 times the speed requiring controls.

I do not need to remind this committee that the provision you passed 2 years ago for indexing performance of computers was the correct conceptual approach. Right now, the definition would be, if that had been implemented, 4000 MTOPS instead of the 195. The administration even said it would index but it has not so far.

Second, these special controls consist of up to 34 complex and costly security conditions that are imposed on both customers and the exporters. We are required to have people also involved in this.

These conditions run into the tens of thousands of dollars per computer or higher for both workstations and for higher performing machines. Sometimes the costs greatly exceed the price of the computer itself. Customers have in many cases thrown up their hands and gone elsewhere. In fact, a lot of them have.

Let me give you an example. A 3-year government-imposed delay in the sale of a Cray computer to a weather research office in India, I guess you know about this story, resulted in the Indians actually developing their own machine out of frustration. Now American high performance computer manufacturers have a new competitor in India, Param. This is a direct result of U.S. export controls.

Due to this short-sighted policy, the U.S. Government lost the ability to control the end use of the technology and prevent diversion to unacceptable countries and American manufacturers lost the market.

The bottom line is these controls are seriously impeding the ability of U.S. companies to sell leading edge, high performance computers in the global market. A number of firms have invested heavily in high performance chips and systems and must gain wide user acceptance. We must gain global acceptance of these early in the life cycle of these products in order to ensure future sales and success.

Supercomputer controls, by creating an artificial advantage for foreign products, impede this initial acceptance and penalize U.S. companies for being at the leading edge of computer technology.

As I have been getting at, much of our problem with export controls is based on foreign availability. We are controlling exports and others are not. The Commerce Department has a study due in August that we believe will prove significant foreign availability and require decontrol at much higher levels, potentially up to 206.

Now, this machine I showed you on the right over here when I went through that, there are companies in Korea and Taiwan, as I said who do this. They do the 66 MTOPS. They are selling this machine and keep in mind that this is upgradable. Once you buy this, you later buy this piece and then you can later buy the piece with the two other sides on it and as time goes on you just trade that one in and you plug this one in. So that fundamentally is the basic supercomputer. The pieces just have to be added to it.

The Koreans and Taiwanese very legitimately are making these and selling them in Russia and in the People's Republic of China and throughout that region, Eastern Europe. And we are prohibited from selling those in that full architecture.

Let me take a moment to describe how the computer industry operates, at least from Sun's perspective and how it promotes foreign availability. Today the industry has what is known as open computer architectures. This makes it simple and cheap for foreign competitors to make clones of U.S. computers without investing significant R&D or having access to any proprietary U.S. origin technology, so it is open.

In Sun's case, our SuperSPARC chip, this is the one I showed over here, is a 66 MTOPS chip and is basically the brains of many of our workstations. The chip is made by Texas Instruments and others and is shipped in volume without controls to companies in Taiwan and Korea. Companies there take an average of 3 to 5 months to build large quantities of clones with these chips inside.

Many of these workstations that Sun builds and exports allow the user to snap in the three SuperSPARC modules that I just showed you. Each is about the size of a silver dollar like the assembly of a LEGO kit.

I would like to let John Gage demonstrate how some of this is all done.

Mr. GAGE. Well, what I thought I would first do is steal some of Greg's slides here. Well, I will not put them all back up because you can see them all. There are numbers up there—maybe I will trade microphones.

There are numbers up there that are interesting. They are the speed that you can move data along a fiber. And actually the better numbers to use, instead of 140, use 155 and instead of 565, use 622. You cited both those numbers. These are the new standards for all telephones in the world. If you have a central office in Topeka and it talks to——

Mr. GEJDENSON. It is 622?

Mr. GAGE. Six-two-two. Six hundred twenty-two megabits. And 155 is the other number. These are just the standards now for moving the little atoms of information, digital atoms, along all the phone systems of the world.

Mr. GEJDENSON. This is both the fiber optic cable that you run between places, either in bundles or what have you, but more important that is the co-processor or what have you, the station where all the information comes in to.

Mr. GAGE. This is the information—I could do it on this wire but not for very far. I could do it on a little better wire across the room, around Rayburn. I could do it from here to downtown on cable coax, but it would be better to use fiber. The better the wire, the faster it goes.

Mr. GEJDENSON. Right.

Mr. GAGE. So what he builds is the world's best fiber and then the stuff at the ends that shines the laser down the fiber to make all this information move.

But the new way the information is broken into packets has been standardized by CCITT, that's the world standards body, and AT&T and Fujitsu and Alcatel and Siemens and Northern Telecom. Everybody is making switches, phone switches, that use this ATM, it is called, asynchronous transfer mode. We love the telecommunications industry for these unpronounceable words. But those are the new atoms that are being switched.

Five weeks ago, on the floor of House Telecom we just built one of these. We built exactly that, a little box, the same size as this thing, which switches these ATM packets. It is just what they bought for Atlanta, Bell South just bought it for Atlanta about 4 weeks ago, not from AT&T but from Fujitsu. All the city switches. And those switch these little packets. And it plugs now right into the back of computers. So everybody—it is the merger of telephony and computing. It is the same atom at the bottom that will link everything together.

This is very important because it makes it cheap. So with a world standard, then somebody can buy something anywhere and plug it in. Except, of course, in this room where you do not have a way to plug in to anything. [Laughter.]

Mr. GAGE. So we built this over in House Telecom, we just put the little switch up and we ran a fiber in that case but also twisted pair and plugged in about six computers and all the stuff came into this central office switch sitting right there and it switched video, audio. So you will see the rest of this week all this news from the cable T.V. conference in San Francisco, Time-Warner making a deal with somebody and everybody trying to make deals. They are attempting to figure out to sell "Terminator 2" or Sylvester Stallone in little ATM atoms across a fiber into every home in the United States and in the world. That is a huge market and it is all made possible by these standards.

So I thought I would discuss that because in Beijing 3 years ago I stood inside the fiber optic network linking 30 separate research institutes all with slower versions of this that we could provide to the physicists and so forth in China. They built their own fiber optic link and they will use these world standards and, as you can see, they are building this stuff right now throughout China. China is rocketing forward.

My major point there was just to emphasize that the convergence of telecommunications and computing mean that these things can be telephone switches, which is a little bit of a competitive world because, you know, because AT&T lost the PBX market in some sense 10 years ago. You recall when AT&T would tell you if you plug something that is not made by AT&T into the network it will go up in smoke? Well, those days changed because if you standardize the interface so everybody can build it——

Mr. GEJDENSON. Do you want rebuttal time on this, Mr. Hughes?

Mr. GAGE. Yes, he does. He does. [Laughter.]

Mr. GEJDENSON. He has probably got a pitch coming for his new computers that he is selling here.

Mr. HUGHES. The leading market share in the world in PBX is AT&T.

Mr. GAGE. There is, I think, over 50 percent of the lines sold now in the United States are not from AT&T, of the newly switched PBXs. Anyway, we will discuss this. It just means that it is converging so that means there is more competition and it means it is cheaper which means everybody is better off because everything is able to be purchased in a competitive way.

The second point I wanted to make is that the people that make this stuff, you have in your hand there a chip. That is just like the 486/586 INTEL chip. There are only four or five interesting microprocessors that will survive in the next 5 years. One of them is from INTEL because INTEL has unlimited amounts of money and will always try to dominate the world market and they make wonderful chips. One is from IBM, Motorola and Apple, a consortium. It will look just like that chip, a little round thing. The third is the SPARC chip that Fujitsu and Sun and Texas Instruments and a hundred other companies will use in all their computers. And there may be a survivor out of DEC that may make their Alpha chip just another silver dollar but if they can get enough volume they may survive with that one. And maybe Hewlett-Packard's chip may survive. After that, there are not any more that you will get in volume inside computers. That is it.

So all of them, if you plot them on a chart, go up at the same rate of speed as people devote engineering dollars to make them go fast.

Who are the designers? This group of people sitting behind the dias here compose—if I just relabeled you, you are the microprocessor designers of the world. It is just a handful. And where did they go to school? All around the world but if you look at the U.S. situation, the National Science Foundation a year ago looked at assistant and associate professors in electrical engineering, not the tenured, one level down, the people that teach the courses. Seventy-five percent non-U.S. citizen. That is a very telling number.

Where are the smart people coming from? India, Taiwan.

So because of Congressman Manzullo's reputation for wanting every detail precisely right, what my job is is to show exactly what Tim mentioned.

This is a machine that is running well below supercomputer level. It is just computing, it has all sorts of things on it.

What we are going to do to just dot the I and cross the T is we are going to kill it.

Mark, if you would just kill it.

We are going to put this board in——

Mr. DWYER. That is a single processor, right?

Mr. GAGE. Yes. Actually, I think it is using two processors at the moment.

And what we are going to do is put this in. You held these exact chips in your hand just a minute ago. We will shove it in and this will then at that moment become a supercomputer.

So go ahead and do that, Mark, if you would. Just kill it, turn it off, stick it in.

In another iteration, it will not have to be turned off, you just shove it in and it works.

Now, the moment that he has that in there——

Mr. DWYER. That is the same board, he just plugged the chips into it.

Mr. GAGE. It is just the same thing you had.

Mr. DWYER. So we did not have to go through the plugging in operation.

Mr. GAGE. There they are, the same thing. It has a half gigabyte of memory or something on it. He just shoves it in, turns it on, it starts up and this is a supercomputer, all right?

So, what happens? If we are in London or in Paris, you people at the door lock it because we cannot have foreigners around where there is a supercomputer. Anyone that is of foreign origin, sorry. Goodbye.

So nobody can come in, nobody can come out.

Tim, do you have a sidearm? You have to stay here 24 hours a day to guard this thing.

Well, these are the rules in this document right here that lists country by country.

Are you Swedish? Oh, well, you are in trouble now. You have to have somebody here 24 hours a day, they have to have an ID. Anybody that is an alien or if you know an alien or might even have talked with an alien, I am terribly sorry.

So here is our supercomputer up and running.

So we at this moment are well beyond the export regulations and, as you can see, you can put it in your pocket. So that is my second major point.

The third point is if we had a link to the world outside, there are 15 million people in the world today on the Internet. The Internet links every scientific and engineering organization in the world so everything you say could be put into digital packets, be on the Internet and be heard by people in 130 countries right now. It exists and it links everybody and when those people that went to MIT but who originally came from Taiwan or China or some place else send notes to their friends, it just goes on the Internet and everybody gets to learn what somebody discovered just a moment ago.

And the end result of this, when the lines get fast and the networks are fast, it does not matter that this computer is in this room because that 155 megabit line provided by Greg Hughes or the 622 goes out, joins with friends, goes to any place in the world and you use this computer from there as if it is next door. So the inevitable speed up of the networks means it does not matter where the computer is.

Mr. GEJDENSON. Let me just interrupt you for one second.

So one of the arguments you are making is that using the fiberoptic cable we have in this country, and with this computer that you can configure in your home to supercomputer speed, you can do the processing here and then with a standard phone line send the answers anywhere in the world.

Mr. GAGE. Exactly. In January, we took the Washington Convention Center, 500 U.S. companies put computers into the convention center at the Interop Conference and linked across a 155 megabit line to California and used computers in California, in this case, generating video, as Time-Warner wants to do in Orlando, and sent it across and it hit the floor and went out to 1000 computers on the floor.

Mr. GEJDENSON. Let me ask you this question, as long as we are right here. This is now supercomputer speed?

Mr. GAGE. Yes.

Mr. GEJDENSON. OK. But it is—what did you say, about 200 MTOPS?

Mr. GAGE. I think 206 or 260.

Mr. GEJDENSON. Two hundred sixty MTOPS. OK. And that one we can make. What is my 486/50 in MTOPS? Four? Eighteen? What did you say before?

Mr. GAGE. Eighteen.

Mr. GEJDENSON. Eighteen. OK. So 18, 260 and 20,000 is the Cray type supercomputer.

Mr. GAGE. Yes.

Mr. GEJDENSON. Now, I am a scientist trying to develop the mathematics to build a nuclear bomb, an atomic bomb of something, and I have to run formulas that are very complicated, that is why I want the supercomputer. If I am a terrorist country trying to make a bomb, and if I am using a Cray to do one of these complicated formulas, is there any way for those of us who are not scientists to figure out what that means as compared to the scientist trying to do it on the one you just built at 260 or at 18?

Are we talking about years difference in computing time?

Mr. GAGE. Well, if you are trying to build the bomb, you do what John Aristotle Philips, the Princeton senior and a pretty good student——

Mr. GEJDENSON. He sells computer software here in Washington now.

Mr. GAGE. Does he really?

Mr. GEJDENSON. Yes, he does.

Mr. GAGE. Well, he just looked it up in a book. And he called a couple of people and he said, you know, I think for my senior physics project I would like to build a nuclear weapon.

Mr. GEJDENSON. And that was in the late 1970's or early 1970's.

Mr. GAGE. Right. And he did it. He got all the pieces together, looked it up in the literature and he did not build it, because the hard part was to get the plutonium and the other things that should be very strictly controlled and watched over. But the compute power was a pencil. So that is how to build it.

Now, you want to make it better, clean, able to be in stockpile for 20 years, designed to do minimum yield—that is where you begin to model in a computer.

Mr. GEJDENSON. If I want a clean atomic bomb, what is the difference to me whether my computer works at 18 MTOPS or at 20,000 MTOPS or 260 MTOPS?

Mr. GAGE. Just how much sleep do you get?

Mr. DWYER. It is just time.

Mr. GAGE. It is time.

Mr. GEJDENSON. How much time?

Mr. DWYER. Well, it is just a factor of exactly those numbers.

Mr. GAGE. Yes.

Mr. GEJDENSON. So it would take me—if I had a computer that ran 200, it would take me 100 times as long as one that took me 20,000.

Mr. DWYER. Yes.

Mr. GAGE. Roughly. What we are talking with a single number summary of——

Mr. GEJDENSON. So 1000 times as long if I have one that is 18.

Mr. GAGE. Yes. An hour opposed to a week.

Mr. DWYER. John, excuse me. The one thing you might want to keep in mind is that the CDC–7600 that was used in the—I am not an expert at this, this is just informational here. The CDC–7600 that was used in the 1970's at a lot of the U.S. weapons plants had a power that was a fraction of what is in this computer over here.

Mr. GEJDENSON. What did it have for MTOPS?

Mr. DWYER. I do not know exactly what it had but it had double digit MTOPS numbers. It was in the low double—do you know what the Argonne was?

Mr. GAGE. This is the CDC–7600?

Mr. DWYER. The 7600.

Mr. GAGE. It is about equivalent to that machine right there.

Mr. GEJDENSON. So that is what?

Mr. DWYER. Well, that one is 260 but the——

Mr. GAGE. The one on the far end.

Mr. DWYER. The single processor one?

Mr. GAGE. Yes.

Mr. GEJDENSON. And that is 18 or 20?

Mr. DWYER. No, it is probably more like 30 or 40.

Mr. GEJDENSON. Thirty or 40.

Mr. DWYER. Something of that order.

Mr. GEJDENSON. So the weapons systems that we have in this country were developed on computers that run at about 30 MTOPS.

Mr. DWYER. In many cases, less than 100. Yes.

Mr. GAGE. Well, the very first ones were developed with machines no more powerful than your pocket calculator. It is just—they were crude, though.

Mr. DWYER. So let me——

Mr. GEJDENSON. Have you finished?

Mr. DWYER. Are you finished?

Mr. GAGE. You now have a supercomputer. We have dotted the Is and crossed the Ts.

Mr. DWYER. Mr. Chairman, if I could just take minute then to summarize here.

The point is that we cannot prevent the development of technology and we cannot control its dissemination. That is really a key point. But the Defense Technology Security Agency, an arm of the Defense Department, is trying in this case. It has told us and other companies that they will hold up licenses for multiprocessor computers for export to Russia and China unless we cripple them by limiting the computing function to one chip. What they really ask is that we basically take these and disable the capability of putting on more than that single board, even if it has multichip capability.

Imagine ordering a four-cylinder car and when it is delivered there is only one cylinder under the hood and it does about 30 miles an hour. You are not going to be too happy.

And it is not just Sun that is producing snap together, high performance workstations. Intel, for example, has its new Pentium chip which right now can be either 60 MTOPS or 67 MTOPS. That is the new Pentium, the 586 as you call it. It will be shipping in the hundreds of thousands this year and at least a million next year to computer manufacturers her and abroad. And, of course, the Pentium chip can be put in multichip computers. It is the same process here. Just multiply four times 60 MTOPS and see what you get. You now have another supercomputer, a 586. And it can be made by the Indians or the Chinese or anyone else.

Ultimately, the workstation and PC industry is going to multiprocessor systems. Frankly, they are reproducing like rabbits and trying to control the export of such prolific commercial technology just forces manufacturing and jobs overseas. It is just simply absurd.

Now, if the United States and its allies were to remove these controls, it would mean 8700 fewer applications worth $10.2 billion in exports that would go right through the system.

In summary, Mr. Chairman and members of the committee, the AEA believes that the time is right to break down the myths of the military criticality of computers and the myth that the United States is the sole source of this technology. The time is right to recognize where the industry is headed worldwide.

I can tell you that the U.S. computer industry will be headed downward if we do not implement a government policy that capitalizes on this administration's commitment to U.S. technological leadership.

And just finally, a real personal note on this, we lost the T.V. industry because the business was not probably managed properly or whatever. The automobile industry, we lost chunks of market share because of quality. This could be the first industry that we lose because the government is involved.

Thank you.

[The prepared statement of Mr. Dwyer appears in the appendix.]

Mr. GEJDENSON. Thank you.

We will start with Mr. Roth.

Mr. ROTH. Thank you, Mr. Chairman. I will try to be brief.

You know, when you giving your testimony, Mr. Hughes and Dwyer and Gage, I was thinking especially when Mr. Gage had mentioned Internet and 15 million people are hooked up. Basically, if we would agree with you, we would be setting up a new paradigm and we would be giving up a lot of control, would we not? Because we would not have any control. I mean, governments would almost become obsolete like the nation state.

Mr. DWYER. Probably. But it is probably happening.

Mr. ROTH. That is why we are all sort of Joe Stalins, are we not, in government? Because bureaucracy is always going to be at loggerheads with you because if we let you take over, there is no need for bureaucrats. There is no need for newspapers to come to think about it.

Mr. MANZULLO. Mr. Roth, that is why we need to privatize government.

Mr. Roth. I will ask the questions and then I will defer to you, Mr. Manzullo.

But I think this is important for us to understand because there is a completely different mind set, is what you are talking about her.

Mr. Gage. I do think it was very—as Stalin said, the introduction of networking in his terms is counter-revolutionary. Maybe it would be revolutionary.

The regime in Beijing cannot withstand networking everywhere. There is no way to support a totalitarian regime when anyone can communicate with anyone. And in the American context, government changes when citizens have access to records and information about the simple things in their town. No one knows today why their school district is bankrupt but they are and they would like to find out why without going to an 8-hour school board meeting. And the ubiquity of the network brings a completely new forum. We optimistically say that a more informed citizenry is a more informed democracy is a better thing. And that is exactly what we are moving very rapidly toward.

The most startling thing for the networking world is that suddenly 3 years early we have these enormous speeds at consumer level prices. We were all surprised by this. It is 2 or 3 years early to have what used to be domain only of Greg Hughes, a very fast network, now available. I could run it on my block in my city myself. I could go string the cable down the back yard. This will break up the local telephone monopoly. It will allow a different regime for information.

Yes. You are right.

Mr. Roth. So this is the new world we are coming into when we talk about the new paradigm and so on and just what is being unveiled here. And what I got from your message is it does not make any difference what you in Congress do because this is the way the world is going. And the only thing you can do is impede our vision. You are not going to impede the progress of this technology. Is that the long and the short of it?

Mr. Dwyer. That is really the correct statement. And the real question is what role is the United States going to play in that because if we do not jump in and understand this new paradigm, other countries will take advantage of it.

Mr. Roth. Well, I appreciate your testimony very much. I really do not have any questions because I guess everything has been said that can be said, so I very much appreciate the testimony and appreciate you being here today.

Mr. Dwyer. Thank you.

Mr. Gejdenson. Mr. Ballenger?

Mr. Ballenger. I am curious because I spoke to you earlier about the fiberoptic cable manufacturing plant in my home town in Hickory and it is not restricted. In other words, those folks can sell anywhere they want to, I guess.

Mr. Hughes. That is correct. The fiberoptic cable is not restricted by COCOM. It is the electronic equipment at the end of that cable that controls the amount of information that goes through the cable that is restricted.

Mr. BALLENGER. Well, what I was thinking is you are restricted and you are losing business overseas and so forth and yet—let us see. We have a French manufacturer in Hickory, North Carolina. We have a German manufacturer in Hickory, North Carolina. I guess because of the freedom of the market, we have become more competitive just because of a little technology we got 50 years ago and at the present time we are expanding, we doubling—SECOR is doubling the size of their operation, Alcatel is doubling the size of their operation. We are creating jobs there because we are not restricting their ability to compete and they are beating the Japanese with that stuff, as far as I understand.

Mr. HUGHES. That is correct. The fiberoptic cable is not constrained at all. It is the electronics at the end. And so the analogy that I used was that you have a 10-lane superhighway or the fiberoptic cable but you are restricting the amount of information that can go on that 10-lane superhighway at the ends, the access to it in the electronics. And that is a technologically outdated situation.

Mr. BALLENGER. Well, I think that in itself kind of proves the truth of what you are saying, that if the outfit that is electronic—I mean, their production is what you all use and they are expanding and exploding in the United States and you all are being restricted by some stupid stuff that we dreamed up. I understand.

Thank you, Mr. Chairman.

Mr. GEJDENSON. Thank you.

Mr. Manzullo?

Mr. MANZULLO. You notice that we are loaded with Republicans on this side because the Democrats are all at the Appropriations Committee this afternoon.

Let me ask you a question. Is what you are saying that we should eliminate all export controls on computers?

Mr. GAGE. I would say that. Yes.

Mr. DWYER. Yes. You know, you can see the—it is like—the answer is yes. It sounds like a radical statement but when you look at the practicality of the export controls in terms of that this is not a U.S. technology any more, this is a worldwide technology. This stuff can be built any place. You begin to question how can you—why bother?

Mr. MANZULLO. Let me ask you another question. Besides the area of computers, how many other ares do you know of that are in the same type of situation?

Mr. HUGHES. I think stated at the beginning of the session was that 88 percent of all of the export controls are telecommunications and computers that we are talking about here. So the vast majority of it is in these two areas. And to answer your first question from a telecommunications point of view, yes, we are recommending working closely together with Congress, with the administration, to eliminate export controls on telecommunications equipment.

Mr. MANZULLO. Mr. Hughes, in your company, how many people or how many manhours do you dedicate to these export/import controls? Do you have any idea?

Mr. HUGHES. I do not. Maybe someone—we have a department of 12 people that costs about $3.5 million a year associated with export controls.

Mr. DWYER. We actually have more than that in the computer business but it is a hidden tax because it is pervasive throughout the organization. You go out, you train people in Russia to fill in the forms and all this sort of stuff.

Mr. MANZULLO. If one of your units sells for, say, $100, how much of that would be reflective in terms of what you spent for export controls? Do you have any idea?

Mr. DWYER. It is buried in the cost. In our case, we would lose money on $100 things. We could not deal with it.

Mr. MANZULLO. Well, that was a hypothetical, obviously.

Mr. DWYER. It has to get up into the—if someone were to buy one of these, we would not be interested. We could not deal with it.

Mr. HUGHES. The key issue, I think, is not the percentage of export control administration, which is a relatively small percentage of our revenue, it is the lost revenues and lost American jobs because of the restrictions——

Mr. MANZULLO. And the delay.

Mr. HUGHES [continuing]. of these controls. The delay and inability to actually go into COCOM controlled markets.

Mr. GAGE. I think Tim summarized the competitive selling situation. He has a 3-month to a year delay and the competitor from Taiwan has delivery tomorrow or next week. So the perception certainly in the mind of those buying these is why even bother dealing with an American company, with a U.S. company? We know the answer is going to be a 6-month, year delay, an enormous amount of paperwork. We will not even talk to them. So it is a hard number to get.

Mr. MANZULLO. So you really have no idea how much you are losing in sales.

Mr. DWYER. We run into it all the time. I have a letter from a professor at Hebrew University and they have been a customer of ours for years and they have stopped buying from us because they can now buy from Korea.

Mr. GAGE. That is right. I was in Tel Aviv 2 weeks ago and Technion has a number of identical computers to ours from Taiwan.

Mr. HUGHES. We have estimated our lost sales in my testimony at $110 million already lost, $50 to $100 million per year, and about a billion through the decade of this export controlled, COCOM controlled telecommunications gear.

Mr. MANZULLO. And you have no way of knowing how many companies do not even contact you because of the length of time involved in the license.

Mr. DWYER. That is the scary part.

Mr. HUGHES. That is true. I do have in terms of discussions in China key decisionmakers saying that they will not deal with us on noncontrolled products because of our inability to provide them with controlled products.

Mr. MANZULLO. I really appreciate your taking all this time.

Mr. Chairman, you know, perhaps one of the ways that we could bring the American economy back is to dedicate ourselves to rewriting this law as soon as possible.

Do you have any idea of the timeframe it would take us to come up with new legislation?

Mr. GEJDENSON. We have until June of next year. We hope to move more quickly than that.

Mr. MANZULLO. Thank you.

Mr. GAGE. May I answer your question? I was too slowing thinking here. You asked what other areas. There is a very important area and that is an area that unfortunately from our point of view was brought to prominence by the White House on April 16th and that is the area of encryption.

The encryption conferences are held in Finland and Italy. The KGB does a pretty good job of making things encrypted so you cannot read them. This is very important in a world where these fast networks let you link everywhere. How do you have security in business communications? You have to encrypt. We cannot export.

Tim Dwyer has an entire crew that strip out the password protection for that machine before it can go to London or it can go abroad.

So we ship something different for outside the United States than inside because we are barred from exporting. And if we actually import encryption software from abroad because it is so good, we cannot re-export it back to the people that wrote it. I mean, it is just—it is——

Mr. GEJDENSON. I was stunned during one of the hearings we had that a bank card, which is a credit card with a chip in it, and the Defense Department had wanted to have background checks on all 50,000 English customers if the American company were to sell the card to the English bank. This, of course, being a country to whom we gave the blueprints and design of the Trident submarine as well as the missiles to go along with it. So we seem to trust the British with nuclear weapons but not with bank cards. It gets a little silly.

Let me just close with a couple of questions here:

If we were to stop fooling around with licenses and just say you could not export these products at all, that we flat out said, “Mr. Hughes, you cannot export these products,” would we stop anybody from getting them?

Mr. HUGHES. No. As we have attempted to show, the technology is available indigenously in China and non-COCOM controlled countries so they would be able to get it. It would only restrict the number of American sales and American jobs.

Mr. GEJDENSON. And at some point if they are not buying your switches, they are going to stop buying Mr. Ballenger’s fiber because they will get that some place else as well and some of it is going to affect other industries.

How does the quality of the fiberoptic equipment manufactured by the Chinese and the Israelis compare to yours in more subtle ways, not simply in the amount of data it handles per second, but in reliability? We do not want you to give a boost to the other guy’s products on the other hand.

Mr. HUGHES. The equipment from Israel is world class in terms of quality. They have sold it successfully in Germany and France as well as China and other countries. It is a fine competitor and very good quality.

Mr. GEJDENSON. And the Chinese and the equipment they have made, have they been able to maintain and keep their equipment operational? One of the old stories about the Soviet Union and the East Bloc is that they get it and a part is missing and the whole system goes down. Are they able to maintain their own manufactured products?

Mr. HUGHES. Well, this system that is in these photographs has been operating since the beginning of this year, January of this year, and it has been operating successfully and I can only assume from that that they can successfully maintain it and I believe that they can.

Mr. GEJDENSON. What countries outside of COCOM have or will have the capacity to manufacture such equipment?

Mr. HUGHES. Israel has it today. We understand that India is developing it and will have it soon. Taiwan and other countries, I suspect, in the near future. I am talking about non-COCOM countries.

Mr. GEJDENSON. Right. Does China have access to state of the art fiber as well as the switching technology?

Mr. HUGHES. Fiberoptic cable is not controlled.

Mr. GEJDENSON. So they can buy that from the United States; they can buy it from anywhere else.

Mr. HUGHES. That is correct. And they can and do make it in China.

Mr. GEJDENSON. Themselves. Actually, we had a secret briefing once by our intelligence folks and after several minutes of questioning about the availability of some of these products even they admitted—of course, I cannot tell you what they said since it was secret but if you heard their hearing, their information, you got less solid information than we got here today but they did not argue with any of your conclusions—that this is available and that the only thing we are doing is damaging American industry. Also, we are damaging American national security because we are crippling industries of the future that we are going to need to stay out in front technologically. For example, the machine tool industry was denied the right to export by the Defense Department, then later the government did not want to buy from the U.S. industry because their technology has gotten so old.

Can we say the same about computers? If we were to shut you down completely, would that prevent people from getting machines as fast as yours?

Mr. DWYER. No. It would—Korea, Taiwan, India, PRC and Russia within a year or so would all hop on the bandwagon and start to move very quickly. Nobody wants to take us on. The foreign countries—if the export control stuff is liberalized, the foreign countries are going to be reluctant to jump in too quickly here because there is already a steamroller effect, if you like, with American technology. But if the American technology shut down, they will jump in and the they will come and export it back here.

Mr. GEJDENSON. So for instance if I were to buy a—I could buy a similar machine to the one you put together from Taiwan, is that correct?

Mr. DWYER. Yes. You could buy one from Tatung.

Mr. GEJDENSON. OK.

Mr. GAGE. You all work very hard and zoom around all the time. Nothing we sell—we are almost a $5 billion company now—nothing we sell will have been on the market for more than a year as of July.

Mr. GEJDENSON. So I can buy that machine in Taiwan or something very——

Mr. DWYER. Or Korea.

Mr. GEJDENSON. Same quality, basically? Same reliability?

Mr. DWYER. Yes. Yes.

Mr. GEJDENSON. OK. Now, I buy that machine, I bring it here and I want to start a little export company and I want to sell it to India. Can I sell it to India?

Mr. DWYER. I do not know how that works with the export controls.

Mr. GEJDENSON. I would have to get a license, would I not?

Mr. DWYER. Or you could just send it from Korea but it becomes subject to U.S. export control.

Mr. GEJDENSON. Right. So even if I do not want to manufacture here and I simply buy things of this quality which are generally available in Taiwan, I should still move my export company out of the United States as well because even buying products made in Taiwan, Korea and India and wanting to ship them to Taiwan, Korea and India from one of those other countries, I cannot do it from the United States.

Mr. GAGE. We ship to a number of U.S. installations around the world. We have to go through a whole rigmarole on that. So let us just build them abroad and ship them to U.S. installations abroad and duck the entire—how do you get around that?

Mr. ROTH. Mr. Chairman, I just have one quick question.

I am curious. When you talk to our bureaucrats and you relay these examples to them and talk to them about problems that you have gotten and what is going to happen in the future, what kind of response do you get from them?

Mr. DWYER. Well, I think the response we get is that they are interpreting the Export Control Act.

Mr. ROTH. So they are saying it is Congress' fault and we are just doing what Congress told us.

Mr. DWYER. Exactly. We are just humble servants of the U.S. Government. We are servants of the U.S. Government and we are doing what we are told. Because if you do take that machine, you multiply it by 60-some-odd, put four processors in it, it is 260-some-odd, the law says 195, bingo. It does not work.

Mr. GEJDENSON. In defense of Congress, Toby, we passed a bill that would have significantly changed that. One was vetoed, the other one stalled in the Senate because of vetoes.

India, China, Taiwan, Korea, Singapore, Brazil are all making machines that operate at the 50 MTOPS range?

Mr. DWYER. Right.

Mr. GAGE. Every country has a kid that has gone out and bought ten 486's on the open market, brought them home and cobbled them together into a multiprocessor. Then with a lot of agony, the kid will make a program run on them. That is where they are at a disadvantage. They do not have the software. But every country has gigaflop computers they have made in the back room in the third year of college.

Mr. DWYER. Yes. Some of that is actually very informal. Someone referred to the Wipro one. I think in your opening comments you mentioned Wipro. Wipro uses standard off-the-shelf Intel chips, 486s and comes up with a supercomputer. They just take this concept of 4 and blow it up to 300 or 400 or I do not know how many they have in their program.

Mr. GEJDENSON. The program first done at Yale or something?

Mr. DWYER. Probably.

Mr. GEJDENSON. Yes. Well, we want to thank all of you for this. It is mind boggling to us, as it has been for some time. We try to review the laws; we see the failure to address the serious issues in a multilateral, international way. Instead they end up as simply almost unilateral, and damaging to some of the cutting edge employers in this country. It is as if we created the wheelbarrow and decided rather than sell it we would shroud it and nobody would figure out how we were moving our products around. Whether it is the switches or the computers, it is clear that these are not only unshroudable, they are generally available. If we want to take particular countries and, for foreign policy reasons, shut them down completely, if the United States for foreign policy reasons decides we do not want to do business with Iran or Iraq or Libya, that may be a foreign policy decision, a kind of ethical decision that you make as a country, but we should not be fooling ourselves into thinking that we are precluding other countries from either communicating at a higher rate or computing at a faster speed by the actions we are taking.

Thank you.

Mr. ROTH. Mr. Chairman, I just want to add something.

I learned something as far I am concerned that was important this afternoon. You know, we are always talking about the computer and the machinery. It is not that computer and that machinery, it is what people have in their mind, it is the knowledge that is the secret and you cannot tie that up. That is the problem.

Mr. DWYER. That is exactly the point.

Mr. GAGE. That is exactly right.

Mr. MANZULLO. You know, the best way to get the law passed fast is to scan in Mr. Gejdenson's picture on that screen there.

Mr. GEJDENSON. Mr. Manzullo, you are going a long way on this committee. [Laughter.]

Mr. GEJDENSON. Thank you, gentlemen.

Mr. DWYER. Thank you.

Mr. GAGE. Thank you very much.

Mr. HUGHES. Thank you.

Mr. GEJDENSON. Our next two witnesses, Dr. Janne Nolan, Senior Fellow, Brookings Institute, and Benjamin H. Flowe, Jr., Partner, Verner, Liipfert, Bernhard, McPherson and Hand, representing the Center for Strategic and International Studies.

Dr. Nolan, we will start with you and we will go to Dr. Flowe. Please proceed as you are most comfortable.

STATEMENT OF JANNE NOLAN, SENIOR FELLOW, BROOKINGS INSTITUTION

Ms. NOLAN. Thank you, Mr. Chairman. It is a pleasure to be here, and I commend the subcommittee for trying to take on this issue and recast the foundations of our export control policy.

You may be happy to hear that I did not bring a nuclear weapon that I am going to assemble here, and show how simple it is.

I think many of the thematic points have been covered in detail in the previous panel. I agree with the previous panel that our current system of export controls does not work, either to stem proliferation or to protect American industry from needless intrusion into its competitiveness.

Now, having said that, I think it is important to remember that being realistic about the challenges of nonproliferation and the challenges of changing the emphasis of the current export control system is not the same as being *fatalistic* about the spread of technology and or an international technology market that has become extremely diffuse.

I think we have great opportunities presented by the competitiveness of American business, including information processing, to use our technological edge for the control of proliferation. It will require some refocus of the way we look at the spread of technology. Let me just come back to that.

I am going to summarize my statement and ask that it be included in the record in its entirety.

I think we agree on three major goals. Of those three goals, we agree that one is to stop the spread of weapons and technology from leaving the former Soviet Bloc as that system disintegrates; two, to constrain the spread of destabilizing technologies to other regions for the production of weapons of mass destruction; and three, to secure very advanced U.S. technology from unwarranted dissemination that industry would not approve of. I include in the latter category everything from biotechnologies to all of the systems that we saw in performance in Desert Storm, the systems which accord us with that technical edge that we rely upon for our security and that is known generally as the reconnaissance strike complex.

The issue here is that the whole idea of export controls, as you have said, have outlived their utility. The basis on which they were conceived— that sovereign governments organizing to deny access to technology—now given that these technologies are increasingly commercial in origin, makes little sense, and that recipients are now increasingly producers of important military technologies, both factors mitigate against a technology denial strategy.

And yet we have very important and potentially very dangerous forms of proliferation that go on that have to do with the production of weapons of mass destruction.

As the picture of the technology market becomes more complicated, it in fact puts an even greater premium on selective controls of the kind that we can enforce. If you look at the whole picture, it is not just nuclear, chemical, and ballistic missile technologies that we should be worried about. There is a whole new generation of biotechnologies, where advances in biotechnology which promise potentially great advantages for the eradication of disease, technology we want to see proliferated, that we want to have countries receive, are very close to the capabilities that can be adapted for usable and highly lethal biological weapons of a kind that we have never seen before.

I think this is a microcosm of the problem. You want this kind of capacity to be developed and globally disseminated but you do not want its diversion by countries intent on aggression, or its diversion through commercial supply networks that violate international law.

The current emphasis on supply side controls today means that we have a huge, cumbersome apparatus, bureaucratic and otherwise, which is simply not working. It is very costly. It is costly not just to industry, it takes up enormous amounts of political capital. A typical discussion in the bureaucracy about a particular export control case really reminds you of bureaucratic warfare, rather than the representation of national interests.

You can see a line up at view that goes back 40 years, with the Commerce Department having one line, which is to promote American business, as is their job; the Defense Department arguing for stricter controls on sensitive technologies; the State Department often typically being preoccupied with the diplomatic and bilateral or multilateral impact of decisions, and generally, most people being extremely unfamiliar with the technologies in question and what their real impact will be.

Mr. GEJDENSON. If I can interrupt you for one second, as you were going through your statement, I noticed two points to discuss. One was that when we were trying to get an export for a digitally controlled cutting device for the textile industry, kind of a nefarious activity in and of itself which had at its heart a 386 chip, we finally got it through the American part of the process. When we got to COCOM, the French were blocking the license, and it turned out the French were blocking it not because of anything that had to do with that particular system but because they were angry that the United States was blocking the sale of a computer to Vietnam which was 20 or 30 years old even though our objections to Vietnam had nothing to do with proliferation, it was over the ending of the Vietnam War. And even these traditional kind of positions, that you point, out change as we found in the case of Iraq. The Commerce Department came to the White House and said we need to find a way to stop selling things to Iraq. Mr. Kimmen, I guess, representing the State Department argued that they needed to sell things to Iraq because they had this brilliant foreign policy of kind of embracing Saddam Hussein. You can see that even the traditional lines get blurred because of other agendas, so you do not even end up controlling the technology when there are other pressures in the process.

Ms. NOLAN. Right. What I argue in my statement is that these discontinuities and contradictions can be fixed if we have clear guidelines and national leadership about what it is we are trying to do.

And I think again what came up repeatedly in this earlier session is we do not know what we want to control for what reason as a *country*. It is left typically to mid-level people to adjudicate these disputes, with bicycle chains if necessary, leaving it to the person with the greatest endurance to win a fight. And that that is not the way to represent American interests or the national interest.

We have a factionalized bureaucracy that has not changed dramatically yet. But there is a commitment to change to the extent that there is a commitment to elevate the importance of nonproliferation in the Clinton administration and some important steps have been taken. The most important I would say is the elevation in the intelligence community of the targeting of proliferation as a key security concern and giving commensurate resources to that goal.

What is not currently on the horizon is how all of this is going to be implemented as a coherent policy in a way that is compatible with economic competitiveness and trade competitiveness. What you miss is hearing from Treasury, the National Economic Council and from industry about how they can participate and contribute to the nonproliferation agenda. And I would say the fault and the reason for that first and foremost is that there has been a real failure to consult industry in coming up with trade controls and other arrangements for nonproliferation.

In the world in which we live, industry is the key source of information, not just about the way technology functions but they are the ones who have the vested interest in seeing legitimate trade go forward, who can watch the life cycle of a contract, who know its disposition better than anyone and who can help come up with realistic controls. Finally and importantly, they are the most important constituency, I think, for coming up with credible proliferation controls that do not intrude needlessly on American business.

There has been some work done in the past that has involved some key companies like IBM to look at a system in which industry participates in safeguarding sensitive technologies for the prevention of the spread of weapons of mass destruction. I would commend you today for having this discussion earlier but was a little concerned as the emphasis was entirely on decontrol. It would be nice to hear from industry more often how they could use the very technologies that they were discussing for the promotion of a functioning proliferation regime.

Let me summarize quickly.

This argues for a system in which the emphasis of a control system shifts increasingly from futile efforts to control the supply of technology—because that is not working—to a system which looks at the application of technology and tracks the disposition of technology. This would occur in a system in which there is open trade with all like-minded countries, leaving aside rogue states and states with whom we have hostile relations. And in a joint partnership with industry, the system would monitor the disposition of key technologies based on the principle of full disclosure on the part of the recipient, be that government or industry.

This notion typically is referred to as transparency. We already have a great deal of transparency in the international market. There is something for everyone in an arrangement of this kind. Details need not be elaborated here, but the point is that in return or almost full access to important technologies, countries and industries would have to agree to disclose the uses of that technology. The shift of government concern and industry concern would be prevent its misuse or misapplication, or its diversion to proscribed ends.

In such a system, it would actually be easier to track violators. Countries or companies involved in illegal supply would be much easier to target. It would be clear that they were not disclosing vital information. That is the point at which you could bring in the range of responses, ranging from intelligence to other coercive means to actual military operations if need be.

The point here is that we have the resources to do this and we do not use them, even in the current system, and even where we have decided we will not sell technology to a particular country. We have been very lax in the enforcement of those restrictions.

And, second, that, if marshalled properly, we have the resources to target the end-users of technology that we know are bent on aiding programs for the development and production of weapons of mass destruction.

There was a rather pejorative thing said today about the Defense Technology Security Agency. I think they are doing their job to the extent that they have been told to track technology that is going to what they consider illicit end users. At least that is how I would define what they are supposed to be doing.

In this fluid bureaucratic system with all of this infighting, I can understand why they would be seen as an impediment to open commerce but I think what we should be looking to is the building of coalitions among these various agencies and various interests, so that they can focus on a much more targeted system of controls. In a system of full disclosure and freer access to technology, their job would actually be easier. It would identify, as they already do, proscribed end users and follow them through the intelligence process.

Finally, I think what is really important here is recognizing that not only does our system have to be multilateral, what we are laboring under here is this tremendously politically unpopular effort at the national level to impose controls or release controls and that this needs to be an internally shared obligation. This is not just a rhetorical commitment to multilateralism but the reorganization we, the Russians, all of the industrial countries, and some industrializing countries, share this problem of wanting a free and open trading system that fosters competitiveness but does not aid and abet the spread of weapons.

And I think in moving to this new conception in this legislation is probably the most important conceptual leap. We should not be seeing this as a zero sum gain between us and the Koreans, the British or the French. The majority of nations support nonproliferation objectives.

Finally, I think as long as we are looking at the integration of the global economy, it should also be seen as an opportunity to really open up a lot of the information and a lot of the other stepping stones that create a much more transparent system so that the idea of blocking supply need no longer be the basis of your policy. But the notion of control is still very much an important concept, but not one as it has been discussed here of needless controls on goods that should flow freely.

Thank you.

[The prepared statement of Ms. Nolan appears in the appendix.]

Mr. GEJDENSON. Thank you very much.

Mr. Flowe.

STATEMENT OF BENJAMIN H. FLOWE, JR., PARTNER, VERNER, LIIPFERT, BERNHARD, McPHERSON AND HAND, REPRESENTING THE CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES

Mr. FLOWE. Mr. Chairman, I am honored to testify here today on behalf of the Center for Strategic and International Studies Project, Export Controls in a Changing World.

The CISIS project has been addressing how our current export control system can meet our national security and foreign policy needs more effectively without needlessly damaging the U.S. economy.

My testimony today cannot reflect all the opinions on our extraordinary and diverse steering committee but I will try to provide you with a useful synthesis in this summary of my written testimony, which I would hereby submit for the record.

While there are strong reasons to maintain some types of export controls, our current system should be reformulated with four key principles in mind: the purposes and objectives of the controls; effectiveness of the controls; costs of the controls; and the right to export.

First, export controls must have clearly defined purposes and objectives. Lofty and often indistinguishable goals like national security and foreign policy are not enough. We need more specific goals and we need a clearer idea of how export controls are to help accomplish them.

Export controls are often our first "ready, fire, aim" reaction to a scandalous problem without a careful balancing of (a) the specific goals and the likelihood of accomplishing them, with (b) the economic consequences.

Export controls should only be part of a comprehensive response to a defined need. Our national response should focus primarily on diplomatic efforts, economic sanctions and where appropriate military action.

In that context, we agree that the nonproliferation export controls are not very effective right now but perhaps we are asking export controls to do a job that they are not quite qualified to do.

Second, everyone from all sides of this equation agrees that effectiveness of export controls in accomplishing their intended objectives is critical. We must either improve ineffective controls or eliminate them.

Some items are uncontrollable because of small size, easy replication or commodity-like status. Likewise, we sometimes try to control items that would contribute in any way to a capability we wish to deter.

A much more effective approach is to focus only on controllable "choke-point" items critical to that capability and increase the penalties for violations of well defined controls.

Our current system also does a lousy job of anticipating technology cycles, as I think you heard earlier today. Obsolete controls are maintained long after being proven ineffective. We need to do better than just reacting and maintaining ineffective controls.

Congress and this Committee in particular deserve considerable credit for creating the foreign availability process to address part of the effectiveness problem. However, its success has been limited largely because it is mandatory only for national security controls and it provides no analysis or action until well after foreign sales have already supplanted U.S. market share.

Our earlier panelists talked a bit about the current foreign availability study on computers. That is one area where U.S. industry leads, but by the time the industry gets relief from what are proven to be ineffective controls, we could have another Airbus situation on our hands if U.S. market share has already been lost by that time.

Congress can improve our system by requiring the effectiveness assessments and then either improvements of the marginally effective controls or their abandonment.

Effectiveness assessments would address foreign availability, controllability, and factors like performance indexing, a great legislative idea rejected to date by administrations. Maybe instead of simply accepting or rejecting automatic indexing and sunsets of controls, we should at least use performance indexes as yardsticks to gain an accurate measurement of effectiveness. My written testimony shows how an effectiveness assessment might apply to proliferation controls. Such a process would also be useful for this committee because it would provide a much better vehicle for legislative oversight so that this committee could help ensure improvement or elimination of what are shown to be ineffective controls.

Third, we need to evaluate better the potential and actual economic costs of export controls in order to balance the decisions on whether to implement or maintain those controls. Our methods of measurement of these costs or of the benefits will always be imperfect. Nevertheless, a legislative requirement to define and evaluate costs as well as benefits would serve this country quite well.

Export controls have economic impacts much greater than immediate lost sales. Other costs include direct effects on jobs, ripple effects on suppliers, loss of any follow-on sales to that market, parts and servicing sales to that market, sales to third parties who can buy unrestricted products elsewhere, and the expense of legal compliance.

We can no longer afford to give lip service to how export controls hinder U.S. competitiveness. Defense conversion, a high priority right now, is difficult enough without maintaining regulatory impediments that dull any competitive edge in the commercial arena. The ASEAN countries, China and the Middle East, which are the targets of our recent nonproliferation controls, already account for nearly $60 billion in U.S. exports. That is more than Japan and over half the EC. These targets of our current controls are our fastest growing export markets. We should only be willing to accept export controls when calculated benefits meet or exceed their actual costs.

Fourth, we consider exporting to be a privilege in this country. Other countries acknowledge a right to export. The distinction allows our Government to delay or deny export licenses with minimal accountability.

Recognizing exporting as a right that can be abridged for the common good would make our system more transparent and responsive. Article 1, section 9(5) of our Constitution forbids taxes on exports, which indicates that we should recognize it as a right.

This would imply the right to judicial review of administrative decisions. No agency in this government likes the idea of any of its decisions being judged, but we have seen no good reason why our courts should not be just as capable here as in other areas of respecting executive and legislative prerogatives to set national security and foreign policy objectives while reviewing their application.

In this context, our current bureaucratic structure is so complex it is counterproductive. My written testimony contains a partial list of the multitude of agencies currently responsible for administering export controls, our interagency dispute resolution bodies, and the current international export control regimes. This long list illustrates why our system utterly confuses even the most experienced exporters. A U.S. business new to exporting has enough to deal with without having to cope with this maze. The need for independent review has never been greater.

Frankly too much time is spent duplicating effort and defending turf, when these agencies really share much more in common than they do in disagreement. The Defense Department now more than ever has absolutely no desire for controls that undermine our industrial base. Likewise, the Commerce Department has no desire to undermine national security.

Balancing these competing goals is fundamental to each and every one of our export control agencies. Our bureaucracies have grown around old notions and what are really disagreements at the margins.

Expert input will always be required for intelligent decisionmaking. But, that is no reason for the United States to lead the world in the number of agencies sharing export control responsibilities or be alone in having no central decisionmaking authority.

Finally, several new multilateral regimes now exist in addition to COCOM: the MTCR, the Australia Group, the Nuclear Suppliers Group and the Supercomputer Supplier Regime. I think I have most of them. Their recent successes in agreeing to common lists of products and technology has been a remarkable response of U.S. led negotiations to threats largely exposed by the war with Iraq. However, these other groups have no practical agreements on targets or the structure, application and enforcement of controls. Prospects for expanding COCOM without the current veto power which the chairman pointed out the problems of hold greater promise than trying to make these other groups more effective.

In conclusion, an export control system can serve important national security and foreign policy purposes and objectives. But, this country can no longer afford ineffective controls. We must take stronger measures to ensure that the articulated benefits of export controls actually outweigh their considerable national costs.

Thank you very much. I would be happy to answer any questions.

Thank you.

[The prepared statement of Mr. Flowe appears in the appendix.]

Mr. GEJDENSON. Thank you.

Let me start first with Dr. Nolan. You can start off and say basically that if you cannot restrict it, if it is generally available then it is almost a game that we are playing with ourselves as far as trying to preclude countries from getting these systems.

If you can get it in Korea and if you can get it in China, if you can get it in Israel, they are not signatories to COCOM. If you use that logic, on the other hand, its logical conclusion is that, when in 1939, or what have you, the Germans had moved into Poland, much of what they need is generally available so we might as well sell it to them.

It may not be as good or as bad as all that, but we do end up somewhere along the line if you follow the general instinct that says we cannot restrict it. It really does not make sense to restrict it unless you can do it multilaterally. We need only look to what is happening in the efforts of the United States in Western Europe to deal with the situation in Yugoslavia to shake our faith in multilateralism, although I am strong proponent of it.

How do we draw these lines? Is it by systems and the danger they possess? It is by countries?

And one of my instincts ends up being, frankly, that if you cannot do anything else, maybe you pick a handful of bad guy countries decide that you are going to sell them next to nothing and you are going to do everything in your power to get your allies to join you on that.

Now, the problem, of course, is that in those areas, it then makes you look even more foolish to the Europeans and others that you tried to get onboard.

My sense at least, is that sometimes the resistance we get from the Europeans in joining multilateral efforts in technology control, is that if you are not careful, the Americans are going to want to restrict everything, so do not start working with them.

Ms. NOLAN. Well, this is the age old problem that does go back to 1939. The beginnings of COCOM had growing pains that are very similar. Even though there was a common enemy, there was major disagreement about what should be restricted or not including once a big fight provoked because the United States did not want baseball bats sent to the Soviet Union because it could raise the morale of the military.

But what is different, I think, is we do have quite a network of agreements beyond COCOM that have to do with dual use technologies, including the missile technology control regime, the chemical weapons treaty, the beginnings of a biological weapons arrangement—certainly we have the protocol on the latter and could build on that. And we have regional agreements that pertain to various aspects of the regulation of military use if not military commerce in weapons of mass destruction.

With that said, it is not appropriate for the United States to be the sole actor trying to persuade recalcitrant allies.

You could look at the current environment just in the same way that you look at Bosnia and say it is a failure of cooperation. I would argue that it is the desperate plight of countries that are finally recognizing that the need for cooperation has become so acute that it is the only way to act effectively and that we are just struggling with a definition of that. And I would say that that is the case in nonproliferation as well.

The key here is to be more targeted and far more selective in what we seek to control and to build on the regimes we have before we start to expand beyond them.

And I mean that quite specifically. Let us take the missile regime. You could look at its failures. But we actually do not enforce it or try to enforce it all that well. What the missile regime does do is identify the critical enabling technologies that go into one kind of military capability and tries to target those either for restriction or as a warning if you see traffic in those systems going on.

I think that is a modest goal that can be enforced. Now, do you enforce this across the world? This is always the question. Is the technology inherently dangerous or is it the recipient?

And I think inevitably in the kind of technologies we are talking about—in the broader sense of dual use technologies—it has to be recipient based. It has to be end user based. You may not even hold an entire country accountable, you simply would bring a violation to the attention of the Germans or the Chinese or other governments that there are firms within their borders who are using technology for a particular proscribed purpose.

We are already doing that and to some effect, I gather. Some of this is obviously very classified but the targeting of illegal supplier networks against specific end users that we know to be involved in illegal trade is an area that is of great potential, based on intelligence sharing and other things which we really have not done very well here.

Mr. GEJDENSON. Let me just make a couple of quick followups. One, is the failure to keep missile technology from Iran, though kind of a very frustrating answer, the proof that we are not making it?

Ms. NOLAN. From going to Iran?

Mr. GEJDENSON. Yes.

Ms. NOLAN. Well, it is interesting. If you look at a map of the suppliers that went into Iraq over the course of the 2 or 3 years before Desert Shield and Desert Storm, it involves dozen of companies and front companies and companies that mutate into new companies literally overnight going across several countries at a particular time. You could look at it and say it is hopeless, there is no way that you can control this kind of trading.

Or, you can look at it based on concentrated intelligence, collaboration of major countries, and a level of attention which frankly we have not paid in the past and say we know most of the way in which the channels have been established. We know these companies. We know what their prior name was. We can target these suppliers much as we try to do this in the drug trade.

Our relative lack of success in trying to stymie illegal commerce in other areas, such as drug trafficking is not a reason for throwing away the controls. That is really what we are talking about here; have we done this ineffectually in the past because we have not done it the right way or is it simply impossible to do? And I would say it is the former and not the latter.

Mr. GEJDENSON. Can multilateral nonproliferation regimes work without the former Soviet Union and China?

Ms. NOLAN. No.

Mr. GEJDENSON. Mr. Roth.

Mr. ROTH. Thank you, Mr. Chairman.

Dr. Nolan, how do you feel about students from Iran and Iraq studying here in the United States?

Ms. NOLAN. Well, it depends on what they are up to, Congressman. I think you cannot stop the flow of expertise. I think that is one of the critical things in nonproliferation. What you can do is monitor where the people who are trained in particular disciplines are going and what they are doing.

And I think we again have the technical and intelligence capacity to know quite a bit about individuals involved in proscribed weapons programs. We cannot stop them from studying nor do I think we should do that. It should not really be about trying to set up impossible barriers around especially that, the migration of people.

Mr. ROTH. So your answer is no, you are not opposed to students from Iran, Iraq, Libya and so on studying in the United States.

Ms. NOLAN. Actually, again, if they were allowed to come here to study, it might be tremendously beneficial. What we are dealing with is recalcitrant governments, not populations.

Mr. ROTH. Yes, but we learned before that it is not that computer that is really our problem, it is the people that know how to make the computer.

Ms. NOLAN. It is what they do with the computer. It is how they assemble the computer, for what purposes and what objectives. That is what we have been least good at tracking and anticipating.

As we supported Iraq in various ways and our allies supported Iraq, we simply did not pay attention to how serious they were about their own military ambitions and we could have.

Mr. ROTH. We could have—I seriously doubt that. The point is that if you are going to have people in this country, if we are going to teach people in this country how to put together a computer, how to do all these other scientific achievements and so on, and then they go back to their home country, you are not going to be able to control what they do or how their governments change. Governments change, people's views change.

So in order to really have—if we really want to have a control on the spread of missiles and nuclear weapons, we have to do something about the educational process and knowledge. That is the secret to the thing.

Mr. FLOWE. If I could just add, though, that assumes that all the knowledge is locked up here in the United States and unfortunately that is no longer the case.

Also, one of the things that set our country apart from the former Warsaw Pact countries is that we did promote the free exchange of ideas which has its problems. There are problems in that but our philosophy has always been to live with those problems.

We talked about the purposes of the controls. If our purpose is symbolic, simply to distance ourselves as with Cuba, regardless of whether it actually cuts off technology, that type of control might apply to students. Otherwise, if we stop them from coming to the United States to learn, they will go to other countries.

Mr. ROTH. I appreciate the testimony of Dr. Nolan and her views and Mr. Flowe. I have worked with CSIS. I appreciate the work you are doing over there, too.

From your studying of export controls, should we not really narrow down what we are trying to control to actually what is controllable and then also to only those weapons of mass destruction?

Mr. FLOWE. Yes. Absolutely. That has been one of the problems.

As Dr. Nolan said, we have not targeted selectively and I might say that is especially the case with the end user type controls. They are fine in principle, but we have not targeted end user controls very selectively either.

We currently have, as explained at some length in our written testimony, a broad net making everyone in the United States potentially liable no matter what they export to any place in the Middle East because, for various reasons, the Government has made a decision to impose that control on every U.S. exporter as opposed to calling out and naming those end users who we think are a threat.

So, we put the burden on the whole U.S. population of exporters rather than selectively targeting and naming who those end users are. And we put the burden on every export, regardless of whether it could materially or directly contribute in any way to the threat.

Mr. ROTH. Well, I hope you carry back to CSIS that we do appreciate the work that they do. I have been with your group and spoken over at your group and so on. You are doing excellent work and I hope you continue it and give us the benefit of your analysis here.

Mr. FLOWE. Thank you very much. CSIS, with the leadership of Dr. Irwin Pikus has put together a good bipartisan and diverse project here.

Mr. ROTH. And I appreciate the Chairman having this hearing today. I am more convinced than ever that we were right a year ago with our Export Administration Act and I think we just have to build on that.

Thank you very much, Mr. Chairman.

Mr. GEJDENSON. Thank you. I thank Mr. Roth and I thank the panel.

I hope that if you have some time in the next weeks, you can give us some outlines of how you would put together a regime to deal with nonproliferation, and what technologies or systems you would use to control the spread of these technologies, and also where we want to control them, where it makes sense to control them, I would certainly appreciate that.

I thank both of you for your testimony and hope to keep in contact with you.

[Whereupon, at 4:10 p.m., the subcommittee was adjourned.]

POTENTIAL SOLUTIONS TO U.S. EXPORT CONTROL PROBLEMS

WEDNESDAY, JUNE 23, 1993

HOUSE OF REPRESENTATIVES,
COMMITTEE ON FOREIGN AFFAIRS,
SUBCOMMITTEE ON ECONOMIC POLICY,
TRADE AND ENVIRONMENT,
Washington, DC.

The subcommittee met, pursuant to call, at 1:37 p.m., in room 2172, Rayburn House Office Building, Hon. Sam Gejdenson (chairman of the subcommittee) presiding.

Mr. GEJDENSON. This is the second in a series of hearings on the Export Administration Act. At our first hearing, there was compelling testimony demonstrating that our export controls are outdated, ineffective, and in need of an overhaul. There was agreement among the witnesses that the United States tries to control a much broader range of equipment and technology than it should and that this damages both our economic interests and our national security interests. A clear example was a situation in China where a phone system data switches that were precluded from American companies being sold to China, but the Chinese were building and buying from other systems that were even more sophisticated.

By controlling too much, we make it difficult to properly focus on our regulatory efforts on chokepoint technologies, and we make it harder to achieve the multilateral consensus needed for the increased discipline in nonproliferation control regimes.

We are hopeful that today's witnesses will help us to frame the solutions to some of these very difficult problems. They certainly have the qualifications and the expertise to do so.

Dr. Roland Schmitt is the President of Rensselaer Polytechnic Institute and chaired the National Academy of Sciences panel on export controls. He is joined by Major General William F. Burns, former Director of the Arms Control and Disarmament Agency and Vice Chairman of the National Academy of Sciences panel on export controls. Also on the first panel is Dr. John Steinbruner, Director of Foreign Policy Studies at Brookings, who served with distinction on the NAS study. He is here today representing his own perspective.

On the second panel we are very fortunate to have Jerry Jasinowski, President of the National Association of Manufacturers. We take his testimony and presence here today as a clear signal of the importance that the business community attaches to this legislation. He will present to the subcommittee NAM's draft bill to revise the EAA.

And with that I would recognize my ranking Republican colleague, Mr. Roth, for his opening statement.

Mr. ROTH. Thank you very much, Mr. Chairman, and let me join you in welcoming our distinguished panel today and people who are going to be appearing before us. We are going to be rewriting the EAA and your testimony is very important to us. You are all very distinguished in your own fields of industry or academia or national security or foreign policy. Brought together, as I see it you represent a truly impressive array of expertise, scholarship and wisdom and these complex subjects of export controls and counter-proliferation policy. Dr. Schmitt, who I just had the good chance of meeting and very impressed with.

And General Burns, when the National Academy study was presented to us 2 years ago, I said it should be the Bible for this subcommittee, and I continue to believe that. Because so many of your findings and predictions have been proven true in the ensuing 2 years. So I want to give added impetus to what you tell us today as we craft this legislation.

And Dr. Steinbruner, I have been with you in a number of meetings we have had and I have always been impressed by your thinking. I know you are one of the best and brightest in the national security field and I look forward to your testimony, because the toughest problem we face is to reconcile export controls and the requirements of counter-proliferation.

And, Mr. Jasinowski, under your leadership, and Howard Lewis, who is here, and Chris Padilla, they all have done a superb job in building an industry coalition behind the specific and detailed set of recommendations for rewriting EAA, and that's so important because we have got to pass this legislation.

Mr. Chairman, I expect that today's hearing will provide us with some very significant testimony that will contribute directly to our rewrite of the export controls. I am really delighted to have you and I am looking forward to your testimony.

Thank you, Mr. Chairman.

Mr. GEJDENSON. Thank you. Mr. Johnson, an opening statement? Opening statements on this side?

Mr. MANZULLO. Mr. Chairman, thank you very much. I would simply ask that in a world of acronyms if you're describing an agency, if you could say what it is as opposed to giving the initials, at least in the opening rounds of the discussions about those organizations, I would appreciate it very much.

Mr. GEJDENSON. Thank you. Does the gentlelady from California have any opening statements she would like to make?

Ms. ESHOO. Just very briefly, Mr. Chairman. First, I would like to thank you for allowing me to join this committee today since I am not a member. I appreciate it very much, especially on behalf of the constituents I represent in Silicon Valley. This issue is one that drives the Valley. It has a great deal to do with competitiveness. And I am looking forward to hearing the testimony today and the improvement of this Act so that we can move on and become the great economic power of the country. Certainly export license control issues figure very, very heavily into that.

So thank you very much.

[The prepared statement of Ms. Eshoo appears in the appendix.]

Mr. GEJDENSON. No further statements? Dr. Schmitt, you want to start?

STATEMENT OF ROLAND W. SCHMITT, PH.D., PRESIDENT, RENSSELAER POLYTECHNIC INSTITUTE

Mr. SCHMITT. Thank you, Mr. Chairman. General Burns and I are honored by the invitation to testify before your committee today on the reauthorization of the Export Control Act. And we are happy, I might say, to see a colleague of ours who has come to testify on his own behalf.

Our testimony, as you have already pointed out, is based principally on the study and the report of a panel that was organized by the National Academy of Sciences and Engineering at the request of Congress under terms of the Omnibus Trade and Competitiveness Act of 1988. The report, Finding Common Ground: U.S. Export Controls in a Changed Global Environment, was published in February 1991, a little over 2 years ago.

We believe that most of the findings and recommendations of that report are robust and that they remain valid in spite of many changes that have occurred since 1991. In addition, in September of 1991 the Academies sponsored a workshop, called "The New Era in U.S. Export Controls," that brought together many experts, including congressional staff members. Beyond that, there has been also a joint project that has been privately funded between U.S. Academy of Sciences and the Russian Academy of Sciences. It has been addressing the question of how these two nations could cooperate in controlling dual-use technologies in the spread of strategically dangerous weapons to politically unstable regions. Our testimony this afternoon is going to draw on all of these activities as well as on the special activities of General Burns that he will describe to you in a few moments.

I want to review the findings and recommendations of the 1991 study, especially as they pertain to the issues that you have asked us to address. General Burns will then discuss the present situation and the future prospects that bear on these issues. We have submitted our joint written testimony, which is a more complete version of our oral remarks.

Now, in all of this we wish to acknowledge the outstanding work of Dr. Mitchell B. Wallerstein, who is seated behind us here, who was the project director of the 1991 study and has continued to play a leading role in all of these subsequent activities.

Now, our 1991 study addressed two fundamental questions: First, how should U.S. export control policies be organized in a post-cold war world? And second, are U.S. export control policies formulated to be supportive of the full scope of our interests?

In answering these questions, there are two overriding features on the international scene. First are the dramatic changes in the former Soviet Union and in members of the Warsaw Treaty Organization that have altered the nature of the threat from this quarter. Second is the growing concern about the proliferation of weapons of mass destruction—WMDs, as we call them—and advanced conventional weapons among politically threatening countries and organizations.

The panel urged that U.S. policy explicitly acknowledge the need to control proliferation-related technologies as a national security concern. To do so will require the participation by republics of the former Soviet Union and the People's Republic of China among others.

Now, within this general framework, the panel reached four broad areas of agreement. First of all, on U.S. export control policy. Carefully tailored export controls are an appropriate and a viable instrument to do several things. First of all, to constrain access by military units of the former Soviet Union and by selected countries to technology and products that could improve or contribute to the development of advanced weapons capability. Secondly, they can constrain access by countries of proliferation concern to nuclear, biological, chemical and missile delivery technologies. And third, impose multilateral sanctions for violations of international agreements or norms of behavior.

The second broad area of agreement of our panel concerns the COCOM control regime. COCOM should be continued but its focus should shift from what we have termed a denial regime where emphasis is on restricting the supply side of exports to what we have labeled an approval regime where emphasis is on verifying the demand-side use of exports. There should be a sharply reduced COCOM industrial list.

The third area is proliferation control regimes. There are now insufficient linkages between the multilateral arrangements to address each of the various weapons of mass destruction and more coherent multilateral attention is needed on international trade in high technology weapons. The United States, UK, states of the former Soviet Union, France, Germany, Japan, and China need to collectively provide the necessary high level leadership, policy coordination and international regimes. Export controls for proliferation mitigation must be narrowly targeted and must be multilateral.

Finally, on the U.S. export control regime, at present a disproportionate amount of bureaucratic resources are expended in resolving disputes among line agencies with different missions. A new policy process driven by Presidential leadership and decisions and a new mechanism to resolve disputes and administer the controls must be established.

Ideally, the control regime would be comprised of three elements: first of all, a Presidential national security directive; secondly, an interagency policy coordinating process led by the National Security Council; and third, a single agency for routine administration. We believe that this general framework has held up very well in the face of the many events that have occurred during the 2 years since our report was issued.

In the case of proliferation-related controls, the lessons learned about the scope and extent of Iraqi efforts to acquire weapons of mass destruction have only underscored the need to shift policy focus in that direction. Unfortunately, due in part to the exigencies of the Gulf War at the time when the report was released, most of the recommendations that we made at that time remain yet to be implemented.

Now, there have been a number of new insights and lessons learned during these intervening 2 years, and General Burns will remark on some of these. Nevertheless, there are many problems with the current U.S. export controls system. Responsibility for their administration remains divided among three main agencies of the Federal Government and includes a number of others in policy formulation and execution. Even though the process has been improved somewhat by the more active leadership of the staff of the National Security Council, it remains slow and cumbersome because of unclear agency jurisdictions, unharmonized or conflicting control lists, and ineffective decontrol procedures.

At a more fundamental level, the U.S. export control system fails to meet the realities of the time scale of technological change and technological diffusion. Thus list modification takes place at an unrealistically slow pace that damages the international competitiveness of U.S. industry.

Now the reality of this was underscored by a recent, June 16th, op-ed in the Wall Street Journal by Scott McNealy, CEO of Sun Microsystems. He pointed out, and I want to quote from him: "Definition of supercomputers that must undergo intense licensing scrutiny when sold to certain countries is so out-of-date that it includes standard workstation computers mass produced by my company and others that perform at less than 1 percent the speed of today's top of the line supercomputing machines."

Scott McNealy goes on to say, and I quote again: "The administration and Congress have expressed their intentions to examine the situation but at the rate they are going this could take 12 to 18 months, a full product cycle. More than 70 percent of 1991 revenue for the computer industry was derived from products that did not exist 2 years earlier. Miss one development cycle and you're seriously hurt. Miss two and you're mortally wounded."

Now, in addition to these concerns there are two other problems that warrant attention. They are the U.S. practices of imposing unilateral controls and of imposing reexport controls. The United States is virtually alone in both of these practices. Part of the problem arises from the U.S. practice of using export controls for multilateral security goals on the one hand and for unilateral foreign policy objectives on the other. Our panel felt that both of these practices should be tightly circumscribed.

First, generally impose them only a temporary basis while active efforts are underway to obtain the cooperation of other governments. And secondly, maintain them on a continuing basis only when the United States feels absolutely compelled to make some sort of a symbolic statement or where there is unequivocally the possibility of continuing harm to the United States, or where there is some possibility of changing offending behaviors in the short term.

Mr. Chairman, we have now entered a different era from the cold war days of the past, one requiring significant changes in the objectives, the policies and practices surrounding export controls. It is time for Congress to craft a new Export Control Act that is both comprehensive and flexible in the authority it grants. The law should be grounded in several fundamental principles.

First, in today's highly competitive global environment where technology is diffusing rapidly through multiple channels, supply side policies emphasizing the denial of technology and end-use products can only succeed if they are totally multilateral. The law should also be clear that the principal purpose of export controls is to promote U.S. national security and is not primarily an instrument of unilateral foreign policy.

Moreover, national security must explicitly include the international competitiveness of our industries. And finally, the proliferation of weapons of mass destruction, missile and other weapon delivery systems, and advanced conventional weapons must be a primary concern of the new law.

Thank you for this opportunity to testify. General Burns will now deal with the present status and future prospects of the many issues of concern to your committee.

Mr. GEJDENSON. General.

STATEMENT OF GENERAL WILLIAM F. BURNS, MAJOR GENERAL, U.S. ARMY (RETIRED), FORMER DIRECTOR, ARMS CONTROL AND DISARMAMENT AGENCY

General BURNS. Mr. Chairman, I am happy to be here with you this afternoon, and I am particularly gratified to be at this hearing with two longtime friends and colleagues, Ronald Schmitt and John Steinbruner. As you know, from early 1992 until a few weeks ago, I served as Special Envoy to Russia and the other so-called nuclear states of the former Soviet Union to negotiate assistance to them under the non-Lugar Act for the dismantlement of certain former Soviet nuclear weapon.

I was gratified by this assignment and I believe we made great progress toward establishing common ground between two former adversaries. One area of my work in this regard was that of export control. The safe and secure dismantlement of former Soviet nuclear weapons has become a crucial issue in achieving political and military stability in a post-cold war world. The export control regime which served us well during the height of the cold war had begun to exhibit disturbing weaknesses in recent years and our National Academy study pointed many of these out.

Unfortunately, the government has been unable to correct these weaknesses in the initial years of the post-cold war era. It seems to me that the time has come to do this.

Last weekend, I had the opportunity to host for dinner a colleague from one of the new republics carved out of the former Soviet Union. A general officer of his country's army like myself, we had much to discuss. One of this abiding interests at this time is the problem of countering potential proliferation of nuclear weapons and other weapons of mass destruction. I was struck by his determination to see this problem through to a positive conclusion. He represents in my recent experience the broad consensus of leadership in these republics today.

But these republics need resources with which to carryout export control functions. Save for the Russian Federation, systems do not exist in these countries to impose a system of export controls. Under the Nunn-Lugar Act, the previous administration allowed me to negotiate programs of assistance in this area. This assistance would consist of familiarization with the international export control system, such as it is; establishment of training and systems of controls appropriate to the country in question; and necessary computer hardware and software to ensure the efficient application of these controls.

It's been reported that the present administration has allocated $2.26 million of Nunn-Lugar funds to Ukraine, Byelorus and Kazakhstan to assist in establishing export and proliferation controls. In my view, this is a good first step to encourage these countries to consider seriously the problem of proliferation of weapons of mass destruction. This deals with only one part of the problem, however. The international regime in which these former Soviet states would participate is in itself flawed.

It is flawed, in my view, on two counts: first, the regime was established to deter exports to the then Soviet Bloc. The efforts of the West in establishing COCOM and the painstaking negotiations over the four decades were reasonably successful in highlighting the problem and applying solutions which were realistic for the time.

It's hard today to imagine that this same system or a minor modification of the same system could be effective to solve today's problems. The enemy of the past now seeks membership. The states against whom COCOM was aimed now want to participate in the control of critical exports as equals, and more importantly, perhaps, eventually as partners.

In my view, COCOM can serve as a useful base from which a new regime can be formed. To be effective, however, a new regime must be formed and put into operation quickly. We waited too long already.

The second flaw I find in our present stance is the superfluity of regimes. We have COCOM. We have the Australia group dealing with chemical weapons proliferation. We have the missile technology control regime attempting to limit the proliferation of that technology. Different partners are represented in each of these and other organizations.

It seems to me that simply adding states of the former Warsaw Pact or the former Soviet Union to these regimes is not particularly useful. We have pointed out that the present regimes aimed at supply side controls may not be the most effective for the situation we see in the future. It seems to me that we now have an opportunity to engage these states of the former Soviet Union and the Warsaw Pact in a new demand-side approach from the outset. As I see it, this approach would establish common goals, identify common interpretations of what constitutes proliferation and suggest common approaches to problem-solving.

In our prepared statement we have pointed out that there is a Catch–22 situation in our relations with the states of the former Soviet Union. To the degree that we continue to enforce a broad spectrum of export controls, we inhibit these states in their attempts at important political and economic transformations. We may have to take risks to engage our new compatriots in this export control effort more than we have been prepared to do so in the past if we are to achieve success in meeting the twin goals of preventing advanced military technologies from falling into the wrong hands and to assist in rapid social, economic and political change.

To further these goals, we have suggested that a cooperative effort now between the United States and the Russian Federation could achieve much to establish this higher level of engagement. We need to establish a joint group to identify and agree on categories of strategically dangerous technologies to converge what we and the Russian Federation are prepared to control. In this process we can also educate not only Russia but other interested states of the former Soviet Union and its allies in the philosophy of control as we see it.

Also, substantially enhanced intelligence sharing in this area will provide——

Mr. GEJDENSON. General, can I interrupt you for one second?

General BURNS. Yes, sir.

Mr. GEJDENSON. There are some seats here at the front of the tables on either side. Those standing are more than welcome to take them. I should have said something earlier. Just leave the back side for any staff that show up there. Four over here and four over there.

Sorry, General.

General BURNS. Also, substantially enhanced intelligence sharing in this area will provide the why to the what that is to be controlled. In sum, a joint approach involving not only the political leadership but also the scientific and technological communities on both sides could show real promise in preventing the spread of the means to create weapons of mass destruction.

Some of these have already taken place as a by-product of our Nunn-Lugar activities. We need to formalize and institutionalize the process.

I would also note that the recent convening of the COCOM Cooperation Forum, while it still is in the discussion stage, has the potential to be a useful way to address problems of proliferation on the broadest possible scale. It needs, however, to include all supplier states to be effective in making sense out of the multitude of counter-proliferation and dual-use export control systems.

This brings me back to this hearing, Mr. Chairman, and I urge you to move expeditiously to reinvigorate the export control process to bring it into synchronization with modern-day realities and to provide a sound legal basis for this administration and future administrations to commit the United States to a continuing leadership role in the control of dual-use technologies and to counter the proliferation of weapons of mass destruction. We cannot afford to permit the United States to continue to be placed at a competitive disadvantage. This in my view undermines our national security. Neither can we afford to compromise the future security of our Nation.

I believe that some of the suggestions we have offered today and we have offered in our National Academy of Sciences report will be useful in achieving these goals.

Thank you very much, sir.

Mr. GEJDENSON. Thank you.

[The joint statement of Mr. Schmitt and General Burns appears in the appendix.]

Mr. GEJDENSON. Mr. Steinbruner.

STATEMENT OF JOHN D. STEINBRUNER, PH.D., DIRECTOR OF FOREIGN POLICY STUDIES, THE BROOKINGS INSTITUTION

Mr. STEINBRUNER. Thank you, Mr. Chairman. I have submitted a statement for the record, I will summarize it very briefly.

Let me begin by reemphasizing that I am speaking as an individual. I was a fully consenting member of the National Academy of Sciences panel, but a junior one. I wouldn't presume to speak for the panel in the presence of its chairman and vice chairman. What I am going to say is fully compatible, however.

Like many others, I would begin by noting that the Export Administration Act is a creature of the cold war. It was designed to deny access to weapons-related technology to a strategic opponent. As the international security situation has evolved, two essential conditions of that legislation have radically altered. First, technical diffusion has made it virtually impossible, with one important exception, to deny access to weapons-related technology. So some mechanism of control other than denial must be used.

And second, there has been, to put it mildly, a radical shift in the international political situation. Dissolution of the opposing alliance and of the Soviet Union itself has created both a new problem and a new opportunity. The problem is that the residual military establishment that the Soviet Union once maintained is subject to internal disintegration. That fact presents entirely different kinds of security problems than the classic external aggression once did. The new opportunity is that we can deal with the Russians and the other Soviet successor states more constructively than we could deal with the Soviet Union during the middle of the cold war. These new circumstances basically dictate an entirely new approach to export controls

The new security situation has at least two dominant problems associated with it. Long-term weapons proliferation is a first-class strategic threat to everyone. Modern technology gives the protection for small states and substate actors to be very, very disruptive. They cannot seize and hold territory and probably cannot exercise societal wide mass destruction of the sort that was associated with the cold war confrontation. But the potential is there for small actors to be exceedingly damaging and exceedingly disruptive. Responding to that fact requires a new form of security organization.

Moreover, in terms of immediate operational threats, it is not a calculated surprise attack we have to worry about but rather spontaneous civil violence emerging from the disintegration of entire governmental systems. This letter is the phenomenon in our witnessing in Bosnia at the moment and in Cambodia and in Angola and in any other places in the world. That kind of problem again requires a very different type of response.

The driving principle that must be applied to these new type of problems is one that is deep in our history. That is simply the principle of cooperative engagement. Although we haven't recognized it very explicitly. Cooperative engagement is the principle we used for dealing with the Japanese and German military establishments after World War II. That is the basic principle we will have to extend, I think, to all major military establishments if we are to respond to the issues of general proliferation and widespread occurrence of internal disintegration.

We must form major power coalitions to regulate weapons deployment and to coordinate those operations that actually are required. No single state will be able or want to do them by themselves.

These kinds of security arrangements are simply incompatible with an attempt to conduct systematic trade discrimination. Given radical changes in the circumstances of international security, I am suggesting along with my colleagues a very different method for controlling weapons-related exports. I believe we have to shift from the old method of attempted denial of access to a new method of enforced disclosure.

Under the method of disclosure, the export of weapons-related items would be generally approved and wouldn't require export licenses for legitimate commercial purposes. But there would be very systematic disclosure requirements imposed both on the producer and on the receiver. People engaging in trade of dual-use technology would have to label their products. They would have to document the point of shipping, the recipient, and the end use. The receiver would have to document end use as well. All this information would have to be registered, and there would be criminal sanctions for any misrepresentations made.

Such an arrangement serves several purposes. It is designed first of all, to make normal trade much more transparent. That is a necessary step for being able to detect illicit weapons programs under the circumstances. In order to detect extensive violation, one must make illegal activity stand out against the background of normal legal trade. The background must be made much more transparent than it currently is.

A disclosure arrangement would also enable enforcement agencies to concentrate on the problems rather than trying to carry the burden of managing, or monitoring normal trade. Most trade is perfectly appropriate. Those illicit activities that are not appropriate or are camouflaged in the background of that appropriate activity. We want the enforcement agencies focusing on the problems and not on normal activity.

If freed of the need of providing prior approval, regulations could concentrate on those areas where remedial action definitely needs to be taken. They would have a better chance of detecting illegal diversions if they can concentrate their time and if they have available all the information that would come from a normal disclosure arrangement.

This arrangement would substantially alleviate the regulatory burden on law abiding commercial suppliers. For those people who are engaged in deliberate deception and illegal diversion of technology to weapons purposes, it would present a much greater risk of detection and much greater sanctions. That is the whole idea of a disclosure based regime.

The basic deal offered to major states for entering a regime is the facilitation of high tech trade in exchange for agreement to regulate for mutual benefit its weapons application. The basic deal offered to suppliers is relief from the burden of seeking prior approval. The government would not continuously in trade in commercial trade channels, but the price of full disclosure of would be, of supply relationships with criminal sanctions if representations are made.

Let me conclude by noting that in fact there are a spectrum of problems regarding proliferation, and for one part of the spectrum the traditional denial strategy not only is appropriate but necessary. That exception has to do with fissionable material—plutonium and highly enriched uranium. We cannot afford to abandon our efforts to deny access to these materials, and it is feasible, I believe, to do that. We can and must deny unauthorized access to fissionable material.

For most other technologies, however, the disclosure rule is a far more promising method of control. For some, much of biotechnology, systematic disclosure is the only method that can be applied. Biotechnology is extremely dangerous. There are weapons of mass destruction that can emerge from modern biological science. And, are both the relevant materials and the necessary information completely open. They emerge from medical science and we cannot restrict access—either in principle or in practice. Since the information and the materials are readily available and it is not difficult as a practical matter to divert them to nefarious purposes. We have no hope of denying access. Our only hope is being able to detect illicit or dangerous activities before they get too far or be able to react to them very quickly if they do arise. We must monitor this technology much more systematically than we are currently doing. We are very, very exposed to big problems at the moment because we are not running a disclosure-based arrangement for this technology.

Biotechnology is the extreme case where methods of disclosures must be applied. Most other kinds of technology fit in between this case and the case of fissionable materials where denial of access is still a feasible and in fact a mandatory method of control. In my own view most technologies are much closer to the problem presented by biotechnology than to the problem presented by fissionable material.

Thank you.

[The prepared statement of Mr. Steinbruner appears in the appendix.]

Mr. GEJDENSON. Thank you. I will start with Mr. Johnson. Mr. Roth?

Mr. ROTH. Yes. I'd like to ask Dr. Steinbruner a question dealing with nuclear proliferation. You talked about the nation state basically, as I see it, still being in control of these nuclear weapons. But when I talk to futurists, they say, No, that it is not the nation state that we have to be concerned about whether it is the Ukraine, Russia, Iran or whatever, but these terrorist groups and different interest groups. How do we when we deal, from a position of like a Congress deal with these terrorist groups? I mean how do you keep the weapons out of their hands?

Mr. STEINBRUNER. The first line of defense and the basic defense against unauthorized access to nuclear weapons are the national control systems. All the international arrangements are designed to bolster and supplement the national control systems. These systems have traditionally been quite drastic. Fabricated nuclear weapons and weapons material are very closely guarded by special troops, and even to this date despite all the disruption in the Soviet Union I think our best information is that these arrangements regarding the weapons are basically being maintained.

However, there is good reason to worry about the disintegration of these national control systems, and we have got a big problem coming. Some 100 metric tons of plutonium will be liberated from weapons by the START I and START II reductions that are being scheduled, and we must invent a control regime for that material. It must involve protected guarding for very long periods of time and that is a new problem. I think there will have to be international coordination to solve that problem.

Mr. ROTH. I just want to followup and then I want to ask another question. But, you know, even when I was a young man we had at the University of Wisconsin this kid that, you know, diagrammed out how to make the nuclear bomb. Remember, we had the CIA all over the campus. They were going to pick up this underground newspaper and so on. And even at that time I said there is no way you can control that.

I think now we really have to think a new—I hate to use this word "paradigm." I do believe that we are really in a new paradigm in this area, and I feel that the way we thought about it in the past is no longer relevant to this present time. I don't know if I can exactly verbalize it, what I am feeling here.

But a nation state, running after these areas is like chasing, you know, a fly with a sledgehammer. We are not going to be able to get the job done. I mean take a look at what happened in New York where you just had 2 or 3 people. I think that this is going to proliferate and it is going to be a much, much bigger problem for us, and we have got to think about that, and I don't know how to get a handle on it.

General Burns.

General BURNS. Mr. Roth, it might be helpful to reflect just for a moment on some of the things that the past administration and the present administration are doing in this regard. In the last 15 months, as head of the effort I was able to get some real insights into how they secure their nuclear weapons, having been quite familiar with how we secure our nuclear weapons, and I must say that I was impressed that their system appeared to be comparably effective.

Mr. ROTH. Pardon me. I thought they didn't even know how many nuclear weapons they had. Were we misinformed.

General BURNS. They have an exact count of their nuclear weapons, sir. There is no doubt in my mind that they know their nuclear weapons and they know where they are.

I would make a distinction, however, between the nuclear weapons which are in existence, in other words, nuclear material in nuclear weapons, of which I believe the military have a good—an accurate, exact count, and the nuclear material which will be produced as these weapons are dismantled. Neither side ever thought about the problem of having to eliminate this nuclear material. We assumed that these nuclear weapons would continue forever and ever and as new weapons were devised, designed and built old nuclear material would go into them. That is not the case now.

As has just been mentioned, upwards of 50 to 100 tons of plutonium will be made available in the next 7 or 8, 9, 10 years, and about 500 tons of highly enriched uranium. We have negotiated with the Russian Federation to assist them in building safe and secure storage facilities for this material during the period that the material is more or less free. In other words, it is out of the weapons and it is moving toward elimination. We have agreed to purchase the 500 tons of highly enriched uranium to convert it to low enriched uranium and to use it as a source of power in our nuclear power plants. This is a plan worked out by Department of Energy which will be at little or no cost to the U.S. Treasury, and actually will be profit-making both for us and for the Russian Federation.

Now, to achieve this in a safe and secure way is a real test, and the problem of proliferation, of course, raises its ugly head in this area. The facility which is contemplated is a facility which will have very modern high technology devices to ensure that both we and they know that every gram of material coming out of weapons can be accounted for from the time it comes out of a weapon until it is burned in a power plant, and this is going to require a high level of cooperation on both sides; this has already been agreed. Access to this facility by the United States has been guaranteed by the Russian Federation. In fact, it will be U.S. equipment which will be installed in the facility as a materials control and accounting system.

Now, this raises interesting problems because are we prepared to export this high tech equipment which has dual uses to the Russian Federation to secure jointly their nuclear material. Under present laws, present conventions and present international agreements it would be very difficult, I think, to export some of this equipment.

So I just point this out as some of the problems that we see in the short run in dealing with this.

Mr. ROTH. All right. If the question is are we going to export this high tech, dual-use equipment, General, that is why we have got you here. You are going to tell us whether we should be doing that.

General BURNS. And I am saying yes.

Mr. ROTH. And Dr. Schmitt.

Mr. SCHMITT. I am saying yes.

Mr. ROTH. You are saying yes.

General BURNS. And what I am talking about here, to be specific, is primarily computer hardware and software.

Mr. ROTH. Right.

General BURNS. But it is not computer hardware and software that is necessarily at the cutting edge of technology, but it is pretty far up on the list.

Mr. ROTH. Yes.

General BURNS. It is the kind of computers that you and I can buy at Radio Shack.

Mr. ROTH. Well, that is true. And, if we don't trust them with the computers, then you know you don't have it in your basis, or to establish, you know, a working relationship that you need.

If the chairman will forgive me, I just want to followup. But I am still back to this original question: How are you going to keep this material—you can work with a government, but how do you work with renegade groups you are going to have all over this world? How about the neo-Communists that will be coming up in Russia? You know they are going to be there. Or other groups around the world, how are you going to work with them to keep it out of their hands? That is where the problem is, as I see it.

General BURNS. That is the problem, sir. And not to give you a general answer to a specific question, but it seems to me that it is essential that we maintain the very stability necessary in the former Soviet Union so that these stray groups do not reach a position of power, so that they can interfere with these storage facilities and so forth. I think that economic assistance to promote economic stability is at the root of the solution.

Mr. ROTH. Yes. Well, you know, I wish that things were as you mention them, General. I do feel, however, that the nation state is going to become less and less important all the time. As a Congressman, I am the last person that wants to say that, but I feel Congress is going to become less and less important all the time. I think that you are going to see these groups become more important. I think that there is a shift going on in the world, and the question that I am trying to grapple with is how can we set this up now to handle that problem at that is coming? I mean how can we anticipate, you know, the problem that is coming in the future, and how can we head it off now?

Gretzky, the great hockey player, they asked him, "You're not the smartest, you're not the biggest, but you're the best hockey player. Why?" He said, "Because I always skate to where the puck is going." And what I would like to do with this EAA is take it to where I think the world is going, and that is why I think that what you have learned I think is so important for us to try to get and grapple with.

Mr. STEINBRUNER. Mr. Roth, let me comment very briefly here. I think the answer to your question involves disclosure. In handling this situation disclosure is truly vital. Basically what we need to do is make sure that all the fissionable material inventories enter an internationally accessible accounting system so that we know where it is all the time. That is the only way that we have any hope of detecting problems of diversion. We cannot leave it solely to any national government anymore.

We have been using a regime of secrecy, regarding nuclear weapons and the fissionable material they contain. National governments do not disclose their strategies. We must introduce rules of disclosure so the international system as a whole knows where all this material is in order to keep it out of the hands of people who might misuse it. Once informed people have the material, as you pointed out, they can make a bomb. The material is the only constraint here. Otherwise, the materials and information necessary for weapons fabrication are thoroughly available.

The only thing that a person who wants to have it and doesn't have it doesn't now have is the fissionable material, and we need to have an accounting system set at very high international standards to make sure that all this material is kept track of continuously.

Mr. ROTH. Thank you.

Mr. GEJDENSON. Mr. Manzullo.

Mr. MANZULLO. Thank you, Mr. Chairman. Mr. Roth, I noticed that you mentioned hockey but you didn't mention the Bulls or the Bucks and basketball.

I have got a couple of questions here. Dr. Steinbruner, you said something that was so shocking that I wrote it down, and I agree with what you said. You didn't say anything improper. But the quote that I have here is "We have no hope of denying access, but the hope is in deterring activities of people who improperly receive materials." Do you recall saying something similar to that?

Mr. STEINBRUNER. The thought is that particularly in the area of biotechnology the information and the materials to do very dangerous things are generally accessible, and our only hope is to be very, very alert to signs that such activity is going on and react to it if it does occur. We cannot prevent it physically by denying access, that is the thought.

Mr. MANZULLO. Can you be more specific in that?

Mr. STEINBRUNER. Well, the basic thought is that we really need international integration in this area. All those laboratories that are involved in research on biological agents need to be integrated into an international system that sets norms and forces them to disclose the nature of their activity. The most dangerous things would have to go on in secret and therefore we don't want anything going on in secret.

In the area of biotechnology, which is an extremely demanding problem, this really is the only hope. The ides is to set norms that are continuously monitored so that the system is basically self-enforcing. Anybody contravening its rules begins to stand out by doing things that are against the norms, Secrecy in this area is extremely dangerous.

Mr. ROTH. Will the gentleman yield?

Mr. MANZULLO. Sure.

Mr. ROTH. I thank the gentleman for yielding.

When we talk about biotech, Dr. Steinbruner, are we working with strains of viruses that could be so lethal there is no defense against them?

Mr. STEINBRUNER. That is in general the basic threat; yes.

Mr. ROTH. Why are we doing that?

Mr. STEINBRUNER. No, we are not doing that. What I am saying is that normal activity for constructive purposes identifies the possibility of doing that. We are not doing that. Nor do I think the Russians at the moment are doing that. It is just that the possibility is readily apparent to anybody who is working in normal medical science.

So there are certain experiments we don't want done, certain viruses we don't want developed. We want to be sure that if anybody begins to do that they are detected and, you know, something done to stop them before it gets too far along.

Mr. ROTH. Thank you.

Mr. MANZULLO. My next question, General Burns, we had testimony here about 2 or 3 weeks ago from several computer manufacturers who testified that the supercomputers which they are building in this country cannot be exported but are readily available, I think, in Russia, India, Brazil, and a couple of other countries in the Pacific Rim.

Is a supercomputer necessary to monitor the type of activity that Dr. Steinbruner was talking about with the labs?

General BURNS. I would say generally no. The kinds of computers that I was talking about are computers that would be used to collate data, to sort data, to operate relatively complex software which would be able to keep track of items on an inventory basis. Computer technology is completely out of my realm, but I would say a 486 is about—is quite adequate for this kind of work. We are not talking about supercomputers.

Supercomputers certainly are useful for scientific and technological research which many countries of the world have and many countries of the world produce and are available, I believe, if one tries hard enough to gain that particular technology or that particular hardware.

I think, Mr. Manzullo, perhaps some of the confusion may arise over various definitions. In the testimony I read from Scott McNealy's op-ed he points out that the official definition of supercomputers today captures machines that operate at only 1 percent of what is truly a supercomputer.

Mr. MANZULLO. That is anything over a 12.5 HIPS or something?

General BURNS. HIPs or something; yes.

Mr. Manzullo. Major, do you believe as you sit there now, a person who has had more experience in this field than most people in government, that computer technology, including the software, should be eliminated from export controls?

General BURNS. I wouldn't go so far as to say it should be eliminated, but I believe that there should be a very serious show cause as to why any particular computer or bit of computer technology should be included in export controls today.

Mr. MANZULLO. Just change the presumption then?

General BURNS. That is right. I think the technology is moving so fast that what is state of the art today is almost obsolete tomorrow. So I think it is silly to attempt to establish norms against which we will measure various items of computer equipment. I think it is more important to judge it on a situational basis, and if there is a potential sale by a computer manufacturer in this country, let's assume that we as a nation want that company to succeed in its sale and let's see what we can do to make that sale successful.

Now, if there are abiding national security reasons why that particular computer going to that particular country at that particular time poses a risk, let's see if we can't resolve that risk. In other words, there may be some safeguards that can be applied so that the computer cannot be used for reasons which would undermine U.S. security, let's say. I think that is the approach we should be taking because I don't think there are that many items of computer technology today that should be restricted.

Mr. STEINBRUNER. Mr. Manzullo, let me note this is a prototypical case of where you need a disclosure-based rule. I don't think it makes sense to deny the production and shipping of the computers, but we do need to disclose where they have gone and what they have gone for. In the case of very advanced supercomputers you may want literally to monitor their continuous operations, which is feasible, to be sure that it is for the avowed purposes and not for some other.

Mr. MANZULLO. If they are available at a Radio Shack, I don't know how you can monitor what is being sold.

Mr. STEINBRUNER. Oh, no. But you can enforce reporting. If you have a disclosure-based rule, you will say, Fine. Go sell the computer but tell us where you sold it and for what purpose so that we have that recorded, so that we can check if we think that there is a problem. Right now if you just allow it to be sold, there is no necessary track of where it has gone, and I think that is the problem. We need to monitor where the trade is going rather than try to regulate by attempting to approve in advance.

Mr. MANZULLO. Thank you.

Mr. SCHMITT. Could I offer one word of clarification here? For those of you who read our report, we use the phrase "approval regime" in it quite often, and I use it in my testimony.

Dr. Steinbruner was a member of our panel, and, as I recall, he invented that phrase. Today, he is changing it to the word "disclosure." I would like to make sure that you understand what he calls disclosure is what he previously persuaded us to call approval regime.

Mr. FINGERHUT. [presiding] Mrs. Meyers?

Mr. MEYERS. Thank you, Mr. Chairman. You've stated that modifications of the control list take place at an unrealistically slow pace in relation to advances in technology. And how would you address this problem? I guess all three of you could address that.

Mr. SCHMITT. Yes, Mrs. Meyers. We did address it quite extensively in our report, and it begins by—well, first of all, in all cases where we are ready to do it, to move to the kind of disclosure regime—I will use that title now—that Dr. Steinbruner talked about. But it also must mean getting these lists down.

In our report we also made recommendations about certain sunshine provisions. Lists should not be permitted just to exist perpetually without any action to reaffirm them, if you like. So there are a number of techniques of that sort that one can use to——

Mr. MEYERS. If it has to be, and it should be a multilateral kind of list——

Mr. SCHMITT. Yes.

Mr. MEYERS. Then what kind of an organization do you need? It would have to be an international organization, because you wouldn't want one country to change the list without all countries changing the list. And how do you get that kind of agreement and what international body do you use?

Mr. SCHMITT. Well, again, we recommended continuing the COCOM arrangement.

Mr. MEYERS. And how do you set the norms on biotechnology so that legitimate medical and commercial activities are not inhibited?

Mr. STEINBRUNER. Again, I think there is a problem in a disclosure-based regime of protecting proprietary information and deciding what information is appropriately proprietary. In the biotechnology area and other areas there are problems of that sort.

In general, the solution is that the registry that I have in mind would have to be able to protect proprietary information and only report, to the extent that it reports at all, in aggregate terms. There is a lot of precedent for this. Companies in other situations are required to submit information that is proprietary and the government has learned how to protect that. This would be important in that area.

The basic point here is, though, we cannot afford to have people doing things we don't know about, and the reason we can't afford that is that some of those things could be exceedingly dangerous and we have to be able to detect when that is happening. And if it is routinely in former Soviet Union and elsewhere possible to conduct technical development in these areas without any reporting, then nefarious activities can hide in the cloud of legitimate activities and we are all in big trouble.

It is important to make basic activity transparent in order to be able to detect that kind of activity that shouldn't go on.

Mr. MEYERS. Thank you, Mr. Chairman.

Mr. GEJDENSON. The gentleman from California.

Mr. ROHRABACHER. I am a latecomer, so I will just make this very brief. And I have looked over your testimony and I—you know, when the cold war was over I thought that things were going to get less complicated, and I guess things have not got less complicated. They get more complicated and more complicated.

I have noted the suggestions that you are making and the full disclosure-is-closure-type of approach rather than the control-type of approach is appealing to me. However, when all is said and done, aren't we really talking about killing some people somewhere? Our ability to say some maniac is going to get a hold of something because we can no longer control that he is going to be able to produce a chemical weapon or something, aren't we going to have to be able to in good conscience knock somebody off?

General BURNS. I suppose my short answer is yes. I don't think anyone has argued that any kind of control regime or anything is going to be 100 percent, and I think the sword and the scabbard is going to be absolutely necessary to put teeth into any kind of regime that we have.

I think one of the problems that I see in discussion of export control regimes and when we get into lists and what should and should not be permitted is that things that I think former Soviet Union needs right now in terms of technology are relatively low technology, things that probably shouldn't be on anybody's list at all. As an example, about a year ago I was briefed on a certain republic's capability to design, through a their design facility—to design public buildings and so forth. They used pencils, papers and T-squares. I can remember in the middle 1940's in mechanical drawing learning how to do that and I know it is possible, and I know that they do very well. It takes them several years to design. We can do the same thing through the Army Corps of Engineers with computer-assisted design in a matter of days if not hours.

So it is not a question that they can't do it, and the technology that we are offering to share with them in terms of doing some computer runs is not particularly advanced technology, but it is the kind of thing that makes the difference between being able to move into the modern world or lag behind for a number of years, so that these kind of flashpoints that you mention, sir, become more and more evident, more and more possible and where someone may have to use violence to eradicate the problem.

Well, in the recent past we have depended on controlling the behavior of honest people, basically, and we are finding now that in order to control the behavior of honest people so that bad results can't happen out there somewhere that it is becoming very detrimental to us economically, and that is evident through our testimony. Our own companies are really suffering because of it.

To the degree that we lessen our controls on honest people, I think that also the opposite end of it means we have to be more willing to do those things that we don't like to do, and that is use force on individuals who are bad people and who are people who will commit evil deeds on a massive scale if they are permitted to do so.

And I think your testimony today has been enlightening, and I will read the specifics. And thank you very much, Mr. Chairman.

Mr. GEJDENSON. Thank you. Mr. Fingerhut?

Mr. FINGERHUT. Thank you, Mr. Chairman. I apologize for not having been here for most of the testimony and the questions, so I won't attempt to try and jump in and duplicate. I do want to make one brief statement and ask one general question.

It is clear to me, coming from a heavy industrial, manufacturing area that has been considerably hit over the last couple of decades by foreign competition, that we have focused the efforts of this country in terms of our trade policy on trying to prevent others from trading with us instead of on trying to do everything we can to help our companies trade with others. And so there is no more important subject and I commend the chairman for holding these hearings and the witnesses for being part of it. And I would commit myself to being as active a participant in moving this to a quick resolution as we possibly can.

The general question, which I know you have addressed in a variety of ways already today, but I just want to lay it out as bluntly as I can and see if you can give as blunt an answer as you can, is that in this day and age with the flow of technology and knowledge and information and computers and communications and travel and all of the issues that have made the world as small a world as it is, that have prevented us from being able to stop terrorists from coming into our own country and planting bombs, and that have just simply made it seem that the world is one small place and our border is very porous, can we control any technologies at all? Can we keep these things from getting into the hands of people if they dedicate themselves to the task of getting it? And so shouldn't we be just simply taking the broadest possible effort to promoting exports and focus the rest of our efforts on defense and protection of our natural interest when we have an enemy that threatens to attack either this country or the free world?

General BURNS. As Dr. Steinbruner pointed out, there are a few key technologies and key commodities such as highly enriched uranium where it is essential that they be controlled. But my emphasis is on the few and I think we should build as strong a ramparts around those as possible. If we only have a few items on a list, then our chances of controlling those items to the degree that we believe it is necessary is quite possible.

If we have a very long list, and I think this is what you are getting at, sir, it is impossible to control. Because we spend most of our time fighting among ourselves what the bottom 10 percent of the items on the list should be, which are presumably the least important 10 percent.

I am a strong believer in American competitiveness. I think we have demonstrated this over the years. The United States has a competitive economy and competitive industry if we allow U.S. industry to compete. I think the worse thing we can do with an Export Control Act is to hobble American industry as previous Acts have.

Mr. FINGERHUT. Other than fissionable materials that you just referred to, can you think of anything else that ought to be on that list?

General BURNS. I think there are probably technologies, as Dr. Steinbruner pointed out, in the biotechnical area. There may be some cutting edge technologies in the aerospace industry. But I think these technologies—I am sorry. These technologies are cutting edge technologies only for a very short period of time, and during this period of time generally American industry is not interested or prepared to export them because there is plenty of business in the United States in those particular technologies simply because they are cutting edge.

Mr. FINGERHUT. I appreciate the response, and again I apologize if it is gone-over territory. But you have helped clarify it for me, and I think we should move forward as quickly as we can on this subject.

Mr. SCHMITT. Can I add a comment to that? Again, in this report that is the basis for our testimony, you have put your finger on one of the key features that we do deal with extensively, and that is the issue of controllability of technology. One thing you do not want to do is continue the practices we have had in the past. One of the elements that has gone into the current export control administration has been the question of foreign availability. We have shown quite clearly in this study how difficult that is to deal with in actual administration of it, and would highly recommend that the approach be examining the issue of controllability of the technology.

So if you once determine that a technology like fissionable material is dangerous in terms of proliferation, then you have to ask the question is it controllable. Dr. Steinbruner has told you his view, and I think all of us agree, and General Burns has too, that yes, the answer to that is yes in the case of fissionable material. It may not be so in very many other cases.

Mr. FINGERHUT. As in the case of so many other areas of law, by attempting to do something that is simply physically impossible to do we undermine the efforts in that area in which we can have success. Thank you.

Mr. GEJDENSON. Thank you. Ms. Eshoo.

Ms. ESHOO. Thank you, Mr. Chairman. Whomever would like to address this is welcome to. I mean clearly—you have all touched on parts of this question. Clearly the new dynamic in foreign policy or national security is the control of nuclear, chemical and biological weapons proliferation, and the materials which go into these weapons.This issue is what you have been touching on. I don't think anyone disputes these controls. But what about other export control? What should we do to address number one?

And since our policy is, these "when in doubt control it—" I mean I look at, restricting pencils. Pencils can be used to draw up a design. Do we want to restrict the export of pencils? Now, since the testimony has gone on and we have had give and take and I am the last one to speak with you, would you drop materials, and address these other issues, such as biotech?

What I am struck with in terms of those that I am privileged to represent is that all of this changes so quickly. How would you build into a policy both the fluidity and the timeliness of things. Maybe this Act should reviewed periodically or something should set into it that has a mechanism that could deal with new technology.

I guess my question is in two parts. If you are separating out, all of the nonweapons related technologies since we are living in another era, and just dealing with materials that is one issue. Then there is the timing issue because we are so far behind now in terms of reality and what the law states.

Mr. SCHMITT. Well, let me deal with the timing issue, which we did deal with, because I remarked a moment ago our basic approach to that was to have sunset provisions on restricted items, on items that you have controls on, that have to be positively renewed periodically. And you might, you know, make the period conform to the rate of change in the technology, if you wish. But indeed we did deal with that issue in our report and did make some recommendations on that.

John, do you want to talk about the materials?

Mr. STEINBRUNER. When you cannot really control access, which is the case in most of these areas, the materials themselves are accessible. Fissionable material really is an unusual example. Then you have to monitor use. And so what we are really suggesting here is a different philosophy. Rather than trying to deny access you have to monitor use, and the reason we are monitoring use is to check on people as to whether they are using it correctly or not. And if they are using it incorrectly or you suspect that, then you bring sanctions to bear upon them. It is important to be able to detect those circumstances in which the use is inappropriate and react accordingly. Those activities must be detected against a broad background of legitimate activity.

So it is a different approach to the issue of control that we are basically after.

Ms. ESHOO. But you would develop the databank, so to speak, of who has what and who they are selling it to?

Mr. STEINBRUNER. That is correct.

Ms. ESHOO. Where they are moving it to?

Mr. STEINBRUNER. That is right.

Ms. ESHOO. And you are saying that they need to monitor—we would monitor what the use is abroad?

Mr. STEINBRUNER. Right. Yes.

Ms. ESHOO. Is there a difference between monitoring and regulating? Is there, in your view?

Mr. STEINBRUNER. Yes, there is. It is possible to set a rule which holds that anyone may use a supercomputer but not for weapons design, just to pick an example. And so if we sell you a computer you have got to verify that you are using it for weather-forecasting or whatever and not weapons design, and we get a chance to check. Such a rule says to the manufacturer go ahead and sell the computer, but it must be monitored, and you have to report who you sold it to. For very sensitive items like that monitoring arrangements are necessary.

You can choose whether you want to monitor continuously or just episodically or on a statistical basis or whatever. The enforcement agencies can do that. But the basic deal is go ahead and conduct trade for legitimate reasons but you have to tell us what you are doing and you have to enable us to be able to check if we want to. That is the only way in which we can possibly go at this so that we can identify those activities that are diverting to illegitimate purposes.

Ms. ESHOO. Thank you very much.

General BURNS. If I may, let me give you a practical example from today of how this works. A year ago I negotiated an agreement with the Russian Federation to provide the Russian Federation with something less than $5 million worth of equipment to be used in responding to accidents or incidents with nuclear weapons. This is a broad array of equipment, everything from how to X-ray a nuclear weapon to see what is broken inside if somebody drops it to communicate equipment which would enable them to respond rapidly to an incident.

In the agreement it is specified that we have the right to go and look at the equipment periodically during the course of the agreement and for 3 years thereafter. So even if the agreement lapses, we still have 3 years to look at the equipment. We also agreed to provide a training program. What we didn't realize was that they were so anxious to find out how we do these things and for the training that we have people there quite frequently so the equipment is in broad view, our junior people talk to their junior people, and it is fairly simple to monitor that this equipment is being used for accident response and the 100 or so radios that have been provided are not in some tank unit someplace.

So I think these kinds of arrangements can be worked out. They are not simple, they are complex. But I think the concept of monitoring and, the new word in arms control, “transparency” are beginning to come into their own, and I think it works.

Ms. ESHOO. Thank you. That was very helpful.

And thank you, Mr. Chairman, again for inviting me to be a part of this and for your leadership on this issue. It is a huge new era of opportunity and the testimony today I think helps develop the path that we need to take.

I would like to submit also an opening statement, which I did not make but used the time to listen.

Thank you very much.

Mr. GEJDENSON. Without objection, the statement will be included in the record.

Let me go through a couple of quick questions. It seems to me that the hearing last week, and I was in those historic hearings raised some interesting challenges for us. The testimony last week was that China, which we refuse to sell a 565 switching station, is now making its own switching stations at 625, and the Israelis that are not part of COCOM are selling the Chinese those communications systems.

Some question, to begin with the, philosophy that limiting communications helps our goals. I think a lot of people would argue it hurts our goals. And actually, I think a lot of people would argue it helps us. As you have testified today, it seems there are a number of systems that are (1) generally available, andthat (2) are questionable to the damage they do to America or international security, and we ought to get rid of those and shrink the list of things we focus on.

Now, it is hard to figure out in some ways, because you can always come up with, you know, the horrendous scenarios that scare everyone, with what is out there. But it seems to me what you were talking about, General, you know design the building with a pencil, and if you don't want that country to build that particular building or something, what gain do we get by slowing them down? For instance, in the area of computers, and one of the things that we keep going, and as I think one of you mentioned in your testimony, or maybe a couple of you, that the standard workstation today breaks the supercomputer standards, and in a sense that even keeping the supercomputer away from some of these countries has questionable impact, so that if they get 4 or 5 or 10 486–50 machines, which are generally available, how much difference is it if you are trying to create a nuclear weapon or do the design testing if I can get 10 486–50's or I have one new Cray? I mean does that achieve some real goal for the United States?

Mr. SCHMITT. It makes it more expensive and the design may not be as—I mean there is no question that if you can make them design things with pencil and paper or low grade things the cost to them of designing will be higher and the quality of the product probably lower. I think that that question is inarguable. But what we are saying and what we have been saying here is that in the end you have got to go back to what are the fundamental interests of the United States, especially if we are talking about the Soviet Union for the moment.

Is it the denial of computers that can do this design more easily? In today's world it doesn't seem that way to us. So basically I think the issue you have got to address is what are our fundamental interests and what is it in our interest to deny to them, if anything, today.

Mr. GEJDENSON. It seems to me that, as we did in the foreign aid bill, we provided some assistance actually to the Soviets to try to help develop their own control regimes which, obviously, I think all of us believe is an important issue. Should we then maybe say, OK, we are not going to try to control the former Soviet Union and other countries that maybe operate at a level of technical capability where we are really not impacting the decision, and make the kinds of assessment that you have made, that it has got to go for their weather system, not for their military units. But should we pick countries, you know, if you went back before the invasion of Kuwait and Iraq with hindsight, or a Libya or other countries that seem to be not stable, aggressive in nature, and simple as kind of a standard of operation say that for these countries we are going to be much tougher, and whether it achieves the goal, or is that just foolishness as well?

I mean, if Libya shows up and they want to buy 486–50's or Crays, do we just say, "Well, they are going to get them anyway?" I mean I guess that is what the other side is going to say to us. Does that make sense? Does it make sense not to regulate computers at all?

Mr. STEINBRUNER. I would say that it makes sense to try to work the basic deal. That if you sign up to the international regime we have in mind, it says, first of all, you can only use technology for legitimate purposes, not for weapons application, and you must disclose your usage. If you sign up to that, we liberalize trade and you are in the system. If you don't sign up to that, right away you are an object of suspicion, so we are going to focus on you, monitor you, hassle you, et cetera. I think there is substantial promise that we can make it harder, for those people dedicated to subverting the principles to do so by isolating them from normal economic arrangements.

Mr. GEJDENSON. One of the discussions in the White House prior to sale of sophisticated systems to Iraq was a debate which focused on the fact that Iraq was a signatory to the Nuclear Nonproliferation Treaty. One of the people at the meeting said, Well—one person complained that Iraq was getting higher levels of technology than Israel, and the other person said, Well, Iraq's a signatory of the Nuclear Nonproliferation Treaty, and the third person said, Well, then it is appropriate that we treat them better than Israel.

How do we make sure that our—I am for moving this line considerably forward. I think most members of this committee understand that it is futile to try to preclude people from getting 486–50's or telecommunications systems, and basically I heading the same direction that you are. But the assault on the other side will be, "Sure they will come forward. Sign us up." We'll take the controls, as Iraq did on nuclear nonproliferation, and continue to operate on its own in a hidden fashion.

Mr. STEINBRUNER. Iraq was not subjected to disclosure requirements. I think that is the critical point about this. And had they been we might have got on to this a lot earlier than we did.

Mr. MANZULLO. Would the chairman yield for a question?

Mr. GEJDENSON. I would be happy to yield.

Mr. MANZULLO. Dr. Steinbruner, what assurance do we have that international thugs would comply with a disclosure agreement that they signed?

Mr. STEINBRUNER. Real thugs probably would not. But they would have to engage in hiding their activities. If a thug tries to buy a supercomputer, he has a problem under this arrangement, because the supercomputer manufacturer has got to say who he sold it to when and where. The location and use would have to be reported, and with a supercomputer there would presumably be monitoring arrangements. So the thug has got some problems in that—particularly if he is engaged in illegal activities and people are alert to the activities. With everything out in the open, it is harder to hide, that is the basic point.

The thug has a greater chance of getting detected under this arrangement, and if we detect him, we can then do things about it.

Mr. SCHMITT. I think the other point to be made, which we point out explicitly, is that export controls are not an instrument to deal with theft and, you know, other types of——

Mr. MANZULLO. Criminal activities.

Mr. SCHMITT [continuing]. illegal activities. I mean they are an instrument that is limited to certain kinds of relationships.

Mr. MANZULLO. Thank you.

Mr. GEJDENSON. The basic question for me in this area is there are some things that are not controllable today. There is no question about it. It is readily available everywhere. My sense is that we do ourselves damage, however, if we take the step that says, Well, you can't stop it. You can buy it at Radio Shack in China. So no matter who walks in we are going to sell them these products that we deem to be universally available. That whether it is a list of terrorist states or what have you, that the new kind of demand from our society is that there are some outlaw states that we are not going to do business with at the same level that we do with the states that sign up. Is that what you are saying here?

Mr. STEINBRUNER. There is clearly a possibility that if a state refuses to sign up to the arrangements; i.e., subject itself to extensive disclosure and reporting requirements, then it does become an outlaw and you deal with it in other ways. Again, what do you say when people complain that thugs can come and buy the stuff under this arrangement? You say that the things are subjecting themselves to much more advanced disclosure requirements and we therefore have a better chance of detecting them. That is the basic answer.

Clearly if a state refuses to accept the disclosure rules, then we would not engage in sensitive technology trade with them. They would be outside the system.

Mr. SCHMITT. I think this might illustrate it because again we are talking about export control here. We are not talking about a lot of other areas. We are not talking about economic embargoes or things like that.

Mr. GEJDENSON. Right. They are not foreign policy objectives.

Mr. SCHMITT. That is correct.

Mr. GEJDENSON. Right. And so in your viewing of this, would you control computers below what the most modern supercomputer is?

Mr. SCHMITT. Well, I don't know whether that is the right level. I mean the level at which you control is an issue—the principles for determining that is again an issue which we dealt with extensively. But certainly what we have recommended is that below some determinable level by experts that you not control.

Mr. GEJDENSON. Let me ask you a question. I got to figure out what is classified and what isn't. Most of the stuff that is classified doesn't make sense to me as I have looked at it. But give me one second here.

One of the problems we have is in the software area and the whole issue of encryption. The argument I have made is that with a 30-year-old or 20-year-old, whatever my first XT was in 1979 or 1980, I can take the most sophisticated software that is on the market today and in a matter of minutes send it from my home in Basra, Connecticut, anywhere on the globe.

And what we have is one of the fights that will come up in some of our, I think, most responsible colleagues who have been, I think, very open-minded in this area—Mr. Bereuter, for instance, who is not with us today but has been very active in this area, he is on the very cautious side of this. It seems to me we are trying to achieve something that is unachievable. That before WordPerfect 5.3 is on the streets of the United States there will be a bootleg copy being sold in China and the Soviet Union and every other place on the globe because it is so easy to transfer this technology.

How do we deal with the encryption issue? How do we deal with software? Because some of this modern encryption that is commercially available is as good as it gets in some ways, isn't it?

Mr. SCHMITT. I don't know any other answer to that than the one we have consistently given here; that is, the controllability issue is a fundamental issue. If it is not controllable, don't try.

Mr. STEINBRUNER. Again, my theme is to impose disclosure requirements on it. That is what you want to do. If you cannot deny access, what you want to do is force disclosure.

Mr. GEJDENSON. Force disclosure in that the companies manufacturing the technology disclose it to whom? Disclose the sale?

Mr. STEINBRUNER. Disclose the sale—the production of the technology and the sale. Disclose also the end-use, where the technology goes and for what purpose. If they misrepresent, they are in legal trouble.

With regard to software or computers, there are very sophisticated things you can do to elaborate the disclosure idea. To be able to track something once it has been made, you can tag it. You can label things. You can make the tags and labels difficult to remove and easy to access. And this is the basic idea.

It is not that we are giving up controls. In my view of the matter what we are arguing is control on a different basis. Do not try to keep things out of the hands of people but rather force them to reveal what they are doing with it and make it hard to hide that. That is the basic idea.

I believe we should monitor much more carefully, and with modern information resources you can monitor things more extensively than we could before. We can keep track of all this with computers which we couldn't do a few years ago. Now we can record the information, and if, in principle, we want to know where a piece of software went and we make provisions for making that accessible, in principle that can be done.

Mr. ROHRABACHER. Mr. Chairman.

Mr. GEJDENSON. I would be happy to yield.

Mr. ROHRABACHER. Who is it who is going to determine whether or not Ira is using the computer for baby milk production or chemical weapons production?

Mr. STEINBRUNER. Well, obviously, we have enforcement agencies whose responsibility——

Mr. ROHRABACHER. Who do you foresee that—I mean, if you want to restructure the situation where we can sell Ira the computer now, but Ira has to have the full disclosure, who is it that is going to make determination? Going to be the watchdog?

Mr. STEINBRUNER. I hesitate to comment because I just haven't thought enough about it, but clearly we need an agency in charge of proliferation monitoring. And, under these arrangements, if everything sold to Iraq was registered and that agency began to be suspicious about a particular activity in a particular location, they would have a lot of assets to use to track the record. Those people who had been involved in it are potentially in trouble.

Mr. GEJDENSON. Reclaiming my time for a second,—we need to have in advance of this kind of pared down process, although we don't have a big choice, it seems to me, where we go, is to get an international agreement from the major industrial powers in the world that access and review it's part of the sales game.

Mr. STEINBRUNER. Exactly.

Mr. SCHMITT. That is a fundamental tenet of all of our recommendations. That these regimes have to be multilateral.

And I might say that we have not in our recommendations said that denial should never be used. As a matter of fact, in the areas of proliferation where you cannot have a system like Dr. Steinbruner is recommending be reliable and assured, then denial still does have a place in the scheme of things.

Mr. ROHRABACHER. But let us note that if we are more willing to sell technology we might have to be more willing to act like the Israelis did, and we can all be very grateful the Israelis took out that nuclear reactor in Ira.

General BURNS. That is the ultimate denial. [Laughter.]

Mr. GEJDENSON. We thank the panel. We are going to keep in close touch with you, Dr. Schmitt and others. We have, obviously, worked with you for a number of years. My sense is that the administration wants to do the right kinds of things. It is, obviously, a sensitive area, but I think the realities of the new world and the technologies demand that we move toward multilateral solutions and some kind of multilateral enforcement mechanism or else we are just kidding ourselves.

We can feel very pious about not selling our 486–50 or our switching system, but it is clear that we are not going to stop computers and switching systems and other things moving around the globe, and so it is in all our interest to make sure it is a multilateral response.

And again, we thank all of you for your patience and help through the years. Thank you.

Mr. GEJDENSON. Our next witness is Mr. Jasinowski.

You are going to place your statement in the record? Is that what you are asking?

We are happy to have you with us. You are an important part of this process. I think that clearly we are looking for from industry—I find in my own district industry comes forward and tells me that they get caught in Catch–22's. They can't get an export license until they have a contract. They can't have a contract until they have an export license. Sometimes it sounds like you can't get there from here.

There have been some changes, to the credit of the previous administration, I think, in the last couple of years. But we have obviously got a long way to go in a number of the these areas, and we appreciate the effort you have put into this, and we are happy to have you here.

STATEMENT OF JERRY J. JASINOWSKI, PRESIDENT, NATIONAL ASSOCIATION OF MANUFACTURERS

Mr. JASINOWSKI. Thank you very much, Mr. Chairman, and our congratulations from the manufacturing community for the leadership shown by this subcommittee on this crucial issue. I was debating with James Carville earlier this morning about the administration's economic policies and jobs, and I said in the discussion that I regard export growth as probably the most important opportunity for the administration and the country in the next 5 years. Thirty to forty percent of our GNP growth over the last 5 years has come from exports, and one of the principal ways to expand exports is to really reform this export control system which is completely out of date.

That is the broad context in which I would make my testimony, Mr. Chairman. I am accompanied by Chris Padilla, General Manager, Federal Government Relations, AT&T, and Howard Lewis, who is Vice President for International Affairs on our staff. These two gentlemen have been working over the last 18 months with 90 other companies to fashion what is for the NAM a relatively historic development. We have actually drafted legislative language to reform the export control system. It is very rare that we will try to draft particular legislation and get agreement on that. We did that once before in 10–5–3 which dealt with depreciation allowances, which were passed.

The reason we drafted a bill in this case is that this is such a technical area that if you do not move to try to deal with it very precisely you can just forget about it. You know better than anyone, Mr. Chairman, we have had a lot of talk about this issue and we did have some reform in the previous administration. I was in the Carter administration and was at the Commerce Department and we were dealing with it then. I remember battles that I would have with Zig Brezinski about whether or not we ought to control this or that.

It has been an ad hoc system for as long as I have known it. There has been rhetoric on both sides of those who want more control and those who want more exports, and we don't come to grips with it. And I think your leadership and this committee's leadership is fairly remarkable in an area where we have had a great deal of talk and not very much action.

Our specific reform proposal is in that spirit. Let's do something. Let's get beyond the rhetoric.

And I think that the National Academy of Sciences (NAS) is another effort to get beyond the rhetoric of the past and to do something about it, and that study and the previous testimony that you had is a remarkably constructive contribution to trying to modernize this control system so that we can have both expanded exports. We now are losing, Mr. Chairman, according to the National Academy studies, $9 billion worth of exports. Each billion dollars worth of exports is about 20,000 jobs.

There is a new study going on that we think will probably show that that estimate which was done 6 years ago by the NAS is going to double. So we are losing, conservatively, Mr. Chairman, $20 billion of exports and that is probably approaching somewhere in the neighborhood of a half a million jobs.

At the same time, anybody who thinks that we have done a great job of controlling dangerous exports in the past is mistaken. Our system is one which has been an ad hoc approach, and we think that we can, with proper legislation not only control the products that ought to be controlled and focus on the countries that ought to be focused on, we can do that and also expand exports.

Let me ask that my full statement be submitted into the record, Mr. Chairman, and let me make the major reform proposals with respect to our reform proposal, if I could.

For drama, if I could, Mr. Chairman, I would like to show you, which I know you have seen but I am not sure all the members of the committee have—this is the U.S. Export Administration regulations. This is what, if you are a small manufacturer—NAM has 9,000 small manufacturers—you have to look at if you want to expand exports. And I might just underline for the committee, we are not in our testimony talking about munitions and arms, we are talking about commercial products. Remember this export control regime is on commercial products and what you get is you get something which is 1500 pages.

Now, if you are a small manufacturer what do you do? Hopefully, if you are a small manufacturer the first chart on my right would be what you would want to have. You an exporter. You go to the Commerce Department and you export. Instead, Mr. Chairman, what we have is this system here, which is really a nightmare. This is the system that you have to go through today if you want to increase your exports.

We have, as I indicate in the testimony, we have in this five Cabinet departments.

Mr. GEJDENSON. For members of the committee, there will be a test on this chart after the hearing. [Laughter.]

Mr. JASINOWSKI. There are five Cabinet departments, four interagency working groups, three different intelligence agencies, two independent agencies, the Joint Chiefs of Staff, the National Security Council, now the National Economic Council, others, and the President himself. This is a maze, Mr. Chairman, that, when I asked the staff how many steps there are, nobody could say. When I said how long does it take to get an export license, nobody could answer it. This is a maze which is designed to say no. It is designed to say no. And you get lost in it, and it is ridiculous for us to have 1500 pages of regulations and a system like this that faces people who are trying to export which is, again, our largest contributor to recent economic growth, contributing over 30 or 40 percent of that growth.

So this is what we are struggling with, as you are, to reform the system. Our proposal, Mr. Chairman, which we have presented to the committee as I indicated, is a result of this 90-company effort. It is a consensus agreement. And the proposals in it, which are outlined on the chart, I would just briefly summarize so that we could get to questions.

The most important premise of the NAM proposal,[1] as you and other members of the committee have already underlined, is that export control on commercial goods and technology, including nonproliferation controls, must be applied multilaterally. The Academy was making the same point. You can't control anything if you don't have multilateral agreement on this.

Under our proposal, the United States must restrict exports of commercial goods and technology through multilateral agreements such as COCOM, the missile technology control regime, the Australia group, the nuclear suppliers groups, and so on and so forth. The United States and its Allies would adopt common policies on exports to countries which don't belong to a control regime and would cooperate in imposing sanctions where necessary. It is very important to move multilaterally. We must, in turn, moving to my second point create incentives for countries to join export control regimes.

Today, as I indicated, there are five major control regimes. Each covers different technologies and operates according to different procedures. Some are more effective than to hers. They serve legitimate purposes. The NAM proposal would offer preferential treatment to countries that agree to participate in control regimes by creating a license free zone for trade among members of different regimes. I think this is a very important incentive, and a way in which we could increase the amount of people who belong to these multilateral regimes.

To facilitate negotiations, we would establish an 18-month transition period where existing controls would be grandfathered while the administration seeks multilateral agreement on control countries, end users and countries. This process of international negotiation will quite naturally lead, going to my third point, to restrictions on a relatively few number of what we call chokepoint technologies that can be realistically controlled.

If I were to generalize about our reform proposal conceptually, I would say you try to broaden the number of countries who are involved in controlling the truly critical products and then you try to get a sharp focus on what products need to be controlled. And remember we are talking here not about everything underneath the sun, we are talking about commercial products. And so if you are concerned about munitions and weapons, that is under a separate law and is controlled differently. We are talking about commercial products.

Turning to my fourth point with respect to the NAM proposal, and I am sure there will be questions on the third, the NAM proposal balances concerns with respect to international emergencies by imposing strict discipline on the use of unilateral export control. First of all, under this proposal it still would be possible for the President to under any kind of emergency necessary unilaterally impose controls. We don't want to get into the business of trying to assume there are not going to be those sorts of emergencies and that he will have the requirement to do that.

---

[1] NAM proposal on export controls is available through the National Association of Manufactures.

What we do, though, is borrowing from the agricultural control regime, we put some discipline on how those controls would be used while providing discretionary authority for the President to use economic sanctions and leaves open and avenue for the executive to impose strong embargoes if we must move further. It also requires beyond that the consent of Congress to perpetuate limited unilateral controls. In other words, at some point it restricts the time, it requires a congressional resolution. It says, If you are really serious about this matter we really ought to focus on an embargo, we ought to focus on a larger international effort, rather than thinking that by controlling one small piece of rather routine commercial products, we are going to have a major impact on a country that represent problems.

Fifth, our proposal establishes clear responsibility and accountability for export control decisionmaking and balances the need for certain agencies to provide policy input to that process. Our proposal creates a commercial export control policy committee consisting of the Secretaries of Commerce, Defense, State, Energy and other key agencies to establish the broad policy that we need to deal with this complex area.

In the past, though, Mr. Chairman, instead of having a policy committee and an implementation arm, we have too often gotten the policy questions involved in the implementation agency. And so we create a separate agency in the Department of Commerce that is actually in the business of providing the routine process by which export controls are approved. This provides the one-stop shopping that the Academy argued for, and it puts this into the kind of business atmosphere it should have.

So on the one hand you have people making policy, and on the other hand you have people who are actually running the administrative requirements for the export control. As I stress, in this area our legislation closely tracks the recommendations of reorganization of the export control system in the 1991 National Academy of Sciences report.

Our proposal does not, as I have said already, transfer the licensing of munitions items such as combat aircraft, tanks or assault rifles into the Commerce Department. These would remain under the jurisdiction of the State Department. But commercial items currently on the State Department's munitions list, such as commercial software with encryption capabilities and civil aircraft would come under exclusive Commerce Department jurisdiction.

Finally, our bill would improve the clarity and transparency of the export control system. To be effective, exporters need to narrow, and an export control system must provide this, we must publicly identify which commodities, countries and end users are controlled. Today, not only do exporters have to contend with the 1500 pages of regulations. Licenses, in addition, are required for destinations not designated on any control list so that they know exactly what it is to be controlled. So that they enter that maze in many cases not knowing the ground rules under which they are playing.

This catch-up provision is particularly pernicious. It is not reasonable to expect an exporter, particularly a small firm which may not have an overseas office, to know something of which the vast intelligence apparatus of the U.S. Government is ignorant. In fact, if you look at this historically, Mr. Chairman, what you have is a case where we have really tried to make the exporters the enforcers for much of our national security and foreign policy questions.

All in all, Mr. Chairman, if I could sum up, we have a system now which is broke. It doesn't work. In terms of providing the best way to implement our need from a national security groups to restrict some items and it certainly doesn't encourage exports, and in fact probably causes something in the neighborhood of $20 billion worth of lost exports and probably a half million in jobs.

The coalition which the NAM has put together has tried to come up with a realistic, specific proposal for how to reform it. Specific goods, technologies, countries and end users would be controlled under a sensible index which would require a validated export license. Absent such a specific designation, no permission or authority to export would be required.

This is the essence of our fundamental reform, Mr. Chairman. I would just indicate that the importance of this issue goes far beyond simply high tech computer companies. This is an issue which is at the core of manufacturing. We intend to take this bill and our proposal with the 90 companies that have joined us and develop a real movement of over several hundred companies that will work with you and other Members of Congress that are trying to bring some sensible balance to this export control system.

Thank you very much for listening to us. Thank you very much for the leadership that you have shown on this important issue.

[The prepared statement of Mr. Jasinowski appears in the appendix.]

Mr. GEJDENSON. Thank you. And thank you for the efforts, not just here today, but historically from your organizations on trying to move forward on what is critical, not just to particular industries, but I think to the economic survival of the country, because these are the cutting edge technologies. These are the places that American industry is competitive, and if we don't succeed in these modern technologies, then we will fail as an industrial nation. The future of the United States isn't smokestacks, it is not lower wages, it is the higher productivity and the most modern of products, and what we need to do is make sure that we can do that in a manner that is consistent with international security and order.

I guess, you know, it is often hard to question witnesses that you have such fundamental agreements with. I guess what I would say is that one of the complaints the opponents will give you is that it has been difficult to get our economic partners to be cooperative in these kind of issues.

What makes you think that we can get them to agree on international regimes now when there is no threat, at least a far-reduced threat from a superpower? When you see the difficulty in coming to an agreement in dealing with the former Yugoslavian Republics or the resistance historically, what makes you think we can get them to cooperate in a successful venture to deal with outlaw countries with specific instances where we have problems?

Mr. JASINOWSKI. Well, I think, Mr. Chairman, it is not an easy task to get them to agree to a whole range of things from GATT to controls. I think that, frankly, in the past the difficulty in the export control area has been compounded by the size of these lists. We now have 30 or 50 percent of these commercial products which are controlled, including workstation computers, which no rational European businessman or public official is going to agree to control. I mean we are the ones who have been off-base on suggesting that the control list should be that large.

I think as we move to a more restricted control list which focuses on what we are really trying to do, restrict products that can do us national security harm, I think the agreement is going to be pretty easy because it is pretty obvious what kinds of products you are talking about. I am no expert on it, but you heard earlier some of the suggestions as to what those products are, and they are in the area of nuclear weapon, inertial guidance system, biochemical warfare, chemical warfare, so it is going to be, I think, technically pretty easy to identify what cutting-edge technologies there are. Once that is done I think agreement will come fairly easily.

Secondly, we are going to say there are incentives. You join the system, you don't have to have a license. We stole a page from the trade policy book and said, you know, there is a tariff free zone here, so I think that will help.

Mr. GEJDENSON. I think one of my great frustrations, we were trying to get an export license for a piece of equipment that had a 386 chip, now something in the realm and speed of a Model T, or maybe at least a '36 Ford but not a '63 Ford, and we were getting opposition from the French. It turned out that the French didn't so much care that we were trying to sell this automated cutting device to Czechoslovakia, but what they were mad about was the United States was pressing them at COCOM not to sell a 30-year-old computer to Vietnam. Totally irrelevant to any national security concerns. Clearly not cutting edge technology. We were following other agendas at COCOM and complicating the situation, making it less likely that these countries would join with us.

And I think you are right that if we can demonstrate reasonably that we have picked a list that is tight enough, if we focus our energies and we give some benefits to joining this regime, I think we do have a shot to do it.

And I think the final answer from my perspective is that success means you are really achieving something rather than setting a list that is much larger that you will never succeed at and really only makes you feel good when you talk amongst yourselves.

Mr. Roth?

Mr. ROTH. Well, thank you, Mr. Chairman. I just have two questions.

First of all, I want to thank you for your excellent testimony here this morning—this afternoon.

Mr. JASINOWSKI. Thank you, Mr. Roth.

Mr. ROTH. This press conference you had this morning I think is really helpful because it focuses attention, and that is what we need here in the Congress, a focus on this, because we have got to galvanize people to action. Howard and Chris I know are doing a good job too. They are excellent. And I see that Lisa Kjaer was helping from Cray, and that is also very important.

Mr. JASINOWSKI. Thank you very much for those compliments.

Mr. ROTH. My question basically is, you know, when you sell things to the people in the cloakroom in the Congress here it is always good to tell them what they are going to lose if they don't go with you. So the question I have for you is, tell me what we are going to lose by inaction, if we don't do anything? That would be the first question.

The second question I have is, you know, these export control are a bureaucratic nightmare. I have been working with this now for some 10 years, and so we would like to bring this into the 21st century, as I say. Your plan is to have these Cabinet Secretaries set policy and the Commerce Department then run the licensing, and have you brought this to the administration? And are they writing the export control now or at least thinking about it and working on them?

And it would be very helpful if the President endorsed this idea when he sends it up here. It makes our job easier. So those are my two questions.

Mr. JASINOWSKI. Well, I appreciate both of those questions. They are very important.

On the second question, we are meeting with Secretary Brown this afternoon following this testimony. Howard and Chris met with Mr. Kyle from Bob Rubin's office yesterday, and they have been meeting with other members of the administration. I have personally been urging the administration to put a much higher visibility on expanding exports, have talked with most members of the Cabinet, written to the President on that as well, and we intend to make a further push on that with the export control being, really, as important as any part of that.

And so I think we will get good—we got good response from those discussions, and I think we will get good support from the administration. And we will do everything we can to make this something that they are putting a lot of emphasis on and try to get the support from that.

The first question you had, Mr. Roth, again went——

Mr. ROTH. What are we going to lose by inaction?

Mr. JASINOWSKI. Yes. I think the lost has to do with the—it really goes to growth and jobs. We did a survey recently of the NAM membership and the vast majority of them have concluded that economic growth rates are going to be higher outside of the United States than they are in the United States in the next 5 years, and therefore they are focused on expanding exports as their top priority. That is not to say they don't want to continue selling in the United States, but most manufacturing companies believe the growth markets are going to be in the Pacific Basin, in Latin America, even in Europe where we are now the low cost competitor. And I would underline that we can compete in any market in the world today.

Given that and given our opportunities to continue that, and the enormous amount of exports that are lost through the control regime, which is probably over $20 billion or half a million workers, the lost is huge in terms of the key priority facing the Nation. That would seem to me to be the big lost. I don't know if my colleagues would stress anything else, or if you hear anything else in the cloakroom that would be the lost. But that is to me what the lost is.

Mr. ROTH. OK. Thank you very much. Thank you, Mr. Chairman.

Mr. GEJDENSON. The gentleman from California.

Mr. ROHRABACHER. Maybe I can pin you down a little bit more on what my colleague is trying to get to. Can you give us a number of—amount of money that you think the United States is losing by having overly restrictive controls?

Mr. JASINOWSKI. Well, I think it is in the neighborhood of $20 billion.

Mr. ROHRABACHER. Annually?

Mr. JASINOWSKI. Annually. That is the loss of exports and you can translate that loss of exports directly into a GDP loss. In other words, exports enter directly into the GDP account and therefore that is a $20 billion loss in economic growth. Or put in job terms, I would estimate it approaches a half a million jobs. I think that that is the direct cost to the current restrictive system.

Mr. ROHRABACHER. OK. Now that isn't a half million jobs and $20 billion that are lost—they are lost under the current system. Under your proposal, do you believe that that type of benefit would be derived? Is that correct?

Mr. JASINOWSKI. Well, I think over time. I wouldn't say that it is a 1-year kind of thing. But over time I would say—my guess is that this control regime could be brought down to something like 5 percent rather than the current 40 percent, so that you really ought to be looking at something like 5 percent of the commercial products under a control regime.

I don't think you can eliminate all that loss. I don't think you can eliminate export controls on commercial products completely, but I think that, you know, 95 percent of that cost can be eliminated and most of it will be benefits.

Mr. ROTH. Will the gentleman yield for just a second?

Mr. ROHRABACHER. Certainly. Go right ahead.

Mr. ROTH. I just want to point out I think the President had this, you know, stimulus package before Congress that we forgot about or whatever, and he would have created 100,000 jobs or something. Here we have a half a million jobs. That is five times that many jobs. You wouldn't have to worry about a stimulus package.

Mr. ROHRABACHER. Thank you. My colleague is correct. I have always thought that reform was a better way of going about creating jobs than raising taxes, for example.

But getting back to the specifics, so it would be accurate for us to indicate that you believe that your proposal would save the country $10 billion or $15 billion annually and bring down the loss of jobs dramatically?

Mr. JASINOWSKI. I would say that since it takes time to implement this over the course of a 3-year period this kind of proposal could save you $10 billion, and I think that between 10 and 15 billion in substantial jobs. I don't want to overpromise and suggest that this thing can be done overnight. You have got multinational——

Mr. ROHRABACHER. I am talking about the end result here.

Mr. JASINOWSKI. Yes. I think that $10 to $15 billion can be saved and something in the neighborhood of 400,000 jobs can be—additional jobs can be achieved in 3 years.

Mr. ROHRABACHER. Without a substantial cost to the people and the safety of the country.

Mr. JASINOWSKI. Without any significant increase in administrative costs. We would have less administrative costs if you didn't have to go through this bizarre maze.

And I am convinced, and I say that based on spending much of my military career in intelligence, communications intelligence, as an instructor at the Air Force Academy, working with NSA, a whole variety of positions which have to do with intelligence and sensitive things. I don't think that you are going to decrease the amount of control that we have over dangerous products. I think you are going to increase it. You are going to make it more effective.

What I can't understand is why we haven't moved sooner to try to make this system more effective from a control point of view.

Mr. ROHRABACHER. Let me ask you this. Getting through that maze costs money, obviously, and someone has to take the businessman by the hand and take him through the maze and the businessman has to pay that person.

Mr. ROTH. That is why we have lawyers.

Mr. ROHRABACHER. The question is how much money right now would you believe is being lost by businessmen or being paid by businessmen in unproductive investment in an attempts to get through the maze?

Mr. JASINOWSKI. Let me ask Mr. Lewis who helped put that chart together to give you an estimate.

Mr. LEWIS. I can't give you a total estimate, but I can give you one anecdotal case example. I was talking to a company just last week who said they spent $500 in staff fees to get a license for a $150 export that was vital to a major plant they were producing.

Mr. ROHRABACHER. They spent $500 to get a $100——

Mr. LEWIS. A hundred and fifty.

Mr. ROHRABACHER. A $150 export.

Mr. JASINOWSKI. Let me also, Congressman—let me go back and try to come back with a little more rich set of anecdotal examples of what it costs to go through that maze. I am sure if I asked some of our companies to give us some estimates we could do that.

Mr. ROHRABACHER. I would appreciate very much if you could give us some specific examples of the cost, and if there is any type of overall costs that you could—or estimate of costs, because it seems to me that—you know, we deregulated—I know my Democratic colleagues disagreed with this at the time and may agree or disagree now, but I remember when we deregulated the price of oil in the early years of the Reagan administration and people were screaming at us and everything like that, but really the people who were hurt the most were people right here in this town who basically had made a living getting people through the maze that we had for energy production, and in the end the consumers really benefited by that. Those individuals, of course, didn't make their money, but that was a nonproductive part of our system.

Now, what you are telling us today is there is another maze for people who are trying to do productive behavior and there is a cost of getting through it. I would like, if you could come back to us with some examples of that kind of cost, some estimates, I would appreciate it.

Mr. JASINOWSKI. Yes, sir.

Mr. GEJDENSON. Thank you. Mr. Fingerhut?

Mr. FINGERHUT. Just a quick comment, and if, Jerry, you have any response, I would be happy to have it.

Number one, I want to thank you for your constructive help in taking the time and effort, and your organization, to put together a very specific proposal. One of my frustrations as a new member of this institution is that too often I get folks who come to me, particularly from the business community, and complain about the state of affairs but in what I would view as a relatively nonconstructive way, without proposing an alternative. You have a proposal. It now behooves us to take you up on that proposal, and I certainly am willing to do what I can to make sure we move this as quickly as possible.

The second point is that this could really for us be a test case, it seems to me. There isn't a single member of this body or political candidate at any level that doesn't go out and talk to all of their constituents who are in business, manufacturing and otherwise, and don't hear automatically that government regulation is a burden to them in terms of their cost. Yet when you try and pin them down on which regulation it is, what regulatory scheme it is, it tends to get much more vague. Not being critical of the businessman, because they are trying to run their business, but they are not able to pinpoint very specific areas.

This is so clearly one that I think it is a test of our ability to identify it and move as quickly as we can. I commend the chairman for helping us move quickly on this. I remember when we passed the extension to June of 1994 of the Export Administration Act—I asked you at the time, I thought—whether we could do this even quicker than June of 1994. It looks to me like with help like this we probably can, and I hope that we can do that.

My only caution, and this would be my final comment, is that there clearly is bipartisan support for this effort. It is an across-the-board effort that needs to be done. Let's as we proceed through this resist the temptation to turn it into, as I think the temptation already has demonstrated itself here a little bit today—to turn it into an attempt to score points on other issues. Let's focus on this issue and get it done.

Along those lines, as much as I respect Mr. Rohrabacher and agree with him on very many issues on this committee—I would not, other than coming up with good anecdotal evidence of stories of cost, I would not be particularly interested in finding one big dollar figure that we can promise the public that we are going to save overnight in order to plug that into a deficit reduction plan or something else.

We have gotten ourselves in a lot of trouble in public life by overpromising and by putting outrageous dollar figures on regulatory changes and regulatory achievements. Let's do it because it is the right thing to do, because it is going to help us, and because we know it is right for the country and right for business. But let's be careful about what we promise and what dollar numbers we throw out because it will only hurt us in the long run.

If you have any comments on any of those points, I would welcome them.

Mr. JASINOWSKI. Well, I would like to agree with your point about the need for bipartisanship and the timeliness of this as a regulatory reform. I have been involved in export control issues for well over a decade. I really did not think this issue was going to be moving forward at this time. I think because of the work that Chris and Howard and those 90 companies have done we have an outline of one way to do this. I think that that shows a degree of widespread support in the business community.

If you are in the computer and high tech area, this could be your most important issue. And I think that we are going to develop 300 or 400 companies that are pushing for this kind of legislation. That is going on there.

I think the cold war is over and therefore on the right there is not the kind of opposition to this kind of reform that there has been in the past, and I think that we can get more support there. I think it is a jobs issue that cuts across both parties, and I think that we can get it there.

I think the leadership of the committee is really quite striking. We have not had this kind of leadership coming on the Hill. So I see an awful lot of favorable signs for a bipartisan effort that will work, and we look forward to working with you on that.

Mr. GEJDENSON. Thank you. We thank you for your testimony and we look forward to moving rapidly.

Mr. ROTH. Mr. Chairman, I just want to tell Mr. Jasinowski if he gets those 300 or 400 companies and you will get any bill through this House you want.

Mr. GEJDENSON. Thank you. The committee is adjourned.

[Whereupon, at 3:50 p.m., the subcommittee was adjourned, to reconvene subject to the call of the chair.]

APPENDIX

STATEMENT OF CONGRESSMAN SAM GEJDENSON

CHAIRMAN

SUBCOMMMITTEE ON ECONOMIC POLICY, TRADE AND ENVIRONMENT

JUNE 9, 1993

This is the first in a series of hearings to assist the Subcommittee in totally rewriting the Export Administration Act.

As we begin this process, one fact is evident: the present system of export controls is broken. It serves neither our national security interests nor our economic interests.

The United States and its allies are attempting to control items for missile and nuclear non-proliferation purposes. However, there is no common understanding of who we are trying to keep this technology away from, and little agreement on the criteria for approving or denying such export licenses. As a result, these non-proliferation export control regimes are seriously impaired. One example of the failure in the current system is that we do not even have multilateral agreement among our closest allies to keep missile technology away from Iran. If we cannot get agreement among the G-7 nations to keep such potent technology out of the hands of one of the most dangerous countries in the world, we must reassess the entire system of export controls. The potential for controlling biological and chemical weapons is even less certain.

U.S. economic interests are also suffering at the hands of outdated export controls. Advances in technology have outstripped much of our ability to control dual use equipment. Much of what we are making is too small, too good, and too commonly available for us to have realistic expectations of keeping it out of the hands of dangerous countries.

Today's hearing will demonstrate that the U.S. Government is attempting to control telecommunications and computer products that are easily obtainable from sources outside the control regimes. In one very notable case, the telecommunications technology we are trying to control is now manufactured in one of the countries to which we are denying such technology. In another case, we find that computer technology is available overseas at levels far in excess of the threshhold for control, and that our ability to successfully restrict its export may be quite limited.

The Subcommittee recently obtained some very revealing information from the Administration. We learned that computers and telecommunications equipment represent 88% of the value of all controlled U.S. exports. If, as today's witnesses will show, much of this technology is available outside the control regimes, we must question whether U.S. export controls are restricting the sale of truly critical technology.

The task before us is to reform the export control system to achieve several objectives:

1) We must increase the multilateralism and therefore the effectiveness of the export control regimes-- in order to successfully control sensitive technology, the restrictions must be multilateral.

2) In order to achieve the necessary multilateralism, we must have some commonality in identifying the countries which are the targets of such controls and the criteria for export licensing.

3) In order to get the cooperation needed from our allies to make the controls multilateral, we must limit the controls to items that are truly sensitive and which we

can realistically control.

4) We must distinguish between the treatment of country groups. We must give highly preferential treatment to countries that participate in and are members in good standing in export control regimes. We should also impose uniformly serious restrictions on high tech exports to terrorist countries.

5) We must recognize that China and the republics of the Former Soviet Union represent extraordinary challenges: they are the targets of some export control regimes, and yet, no non-proliferation export control regime can succeed without their active participation.

6) The export licensing system must be reformed to produce timely processing of license applications and stop the endless discussions within the U.S. government that result in months of non-decisions. We would hope that the Administration would address this issue.

As in the past, the Subcommittee will proceed in a bipartisan manner to deal with these difficult issues. We also anticipate having a close and cooperative working relationship with the Administration throughout the process of rewriting the Export Administration Act.

Opening Statement for Anna Eshoo at the House Foreign Affairs Subcommittee on Economic Policy, Trade, and Environment

Thank you, Mr. Chairman, for allowing me to sit on the committee today as it addresses the issue of export controls. The subject before us is of crucial importance to the district I represent, the 14 District of California, which encompasses much of the Silicon Valley. This area, known to the entire world for its high-tech expertise, is home to many of the companies most impacted by this issue.

Export control regulations and the system that administers them are outdated, ineffective, and in need of overhaul. The current export controls on high technology stem from the defense concerns of a cold war mentality, and do not accurately represent the current reality.

The current set of export controls threatens our economic security, which is just as important as military security in the current world order. Lost opportunity for U.S. companies to export means lost jobs for U.S. workers, lost tax revenue, and less funding for the research and development that creates new technology and new jobs.

The existing regulations also hamper the ability to assist emerging democracies who need our technology more than our tax dollars. As our economy becomes increasingly global, joint ventures between U.S. companies and overseas partners will become more and more common. This cooperation requires the ability to exchange products, technologies, and information with our overseas partners.

This is not an issue that lends itself to years of study -- technology moves too quickly. In many segments of high-tech industry, a product life cycle can be as short as one year. Companies cannot afford to wait. Therefore, it is critical for Congress and the Administration to move as quickly as possible on this issue.

I appreciate the attention that the Chairman and the Subcommittee have given this issue, and look forward to true progress on this most pressing issue.

Statement of

GREGORY N. HUGHES

President
AT&T Transmission Systems

on behalf of

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

before the

Subcommittee on Economic Policy, Trade and the Environment
Committee on Foreign Affairs
U.S. House of Representatives

Washington, DC
June 9, 1993

Statement of
GREGORY N. HUGHES
President
AT&T Transmission Systems

Thank you, Mr. Chairman. More than fifty years ago, the Soviet dictator Joseph Stalin vetoed a plan to modernize Russia's communications network, saying of the telephone, "I can think of no better instrument of counter-revolution".

Just a few months ago in Vancouver, the first democratically-elected leader of Russia asked President Clinton to help him... by removing restrictions on the sale of modern telephone equipment to his country.

The contrast could not be more striking, nor the comparison more illustrative.

In the information age, there are few things more important to political and economic development than modern, reliable telecommunications. When Boris Yeltsin needed to communicate news from the Russian Parliament during the August 1991 coup, he relied on a fax machine. When reform-minded protesters in Thailand were threatened by troops in the streets of Bangkok, they communicated by cellular phone. When President Clinton identified open radio and TV broadcasts into China as a condition for renewing MFN trading status, he underscored the role of communications in political reform.

With all the evidence that telecommunications is good for democracy, one might think that exports of advanced telephone equipment to Russia and China would be permitted, even encouraged. But in fact, restrictive rules on telecommunications exports still exist, left over from the Cold War like a reminder of another age. Of the ten types of high technology still regulated by COCOM, telecommunications is the most tightly restricted. Equipment for fiberoptics transmission, software for digital telephone exchanges, and cellular telephone gear are regulated as potential threats to U.S. national security.

Modern telephone networks do indeed pose a threat---to the opponents of democracy. For years, it was said that the pen was mightier than the sword. Today, it's the fax machine that is mightier than the assault rifle, and it's time to change the way we control telecommunications exports.

I head the AT&T business unit which manufactures equipment for transmitting telephone calls over fiberoptic networks. There are few product areas which better illustrate the need for change in COCOM rules. High-speed fiberoptic networks are today's "information highways", allowing more people to communicate more information, more reliably and at lower cost.

Fiberoptic cables have been allowed for export to China since the mid-1980s, and to Russia since 1992. But cable laid in the ground is worthless without transmission equipment capable of sending calls across the fiber. Most such equipment in use today on long-distance routes in the United States can carry about 30,000 simultaneous phone calls over a hair-thin strand of fiber. COCOM rules limit transmission equipment for Russia and China to about 1,900 simultaneous calls, or sixteen times less than the current technology. Allowing the construction of fiber networks--but limiting the number of calls that can be carried over them--is like helping Russia and China to build a ten-lane superhighway... and then restricting its traffic to a few horse-drawn carriages.

Change in COCOM regulations has come slowly. So slowly, in fact, that controlled countries have developed their own advanced technology, and firms from countries which aren't bound by COCOM rules now threaten to replace us in the market. Let me give you a few examples.

The pictures you see before you were taken on April 15, 1993, by AT&T engineers visiting a telephone network facility in Shanghai, China. They show a high-speed optical transmission terminal which was indigenously produced in China, using commonly-available components. It operates at 565 megabits per second, and can simultaneously transmit about 7,600 telephone calls, or roughly four times the current COCOM limit. Our engineers noted that it was produced with the latest "surface-mounted-device" technology, such as that used in AT&T's most modern factories. This equipment has been in regular operation since January 6, 1993, on a 167-kilometer route between the eastern Chinese cities of Shanghai and Wuxi.

But even if controlled countries weren't already making their own equipment, they could buy it legally from non-COCOM sources. Earlier this year one of our competitors, based in Israel, delivered six similar--but more advanced--fiberoptics terminals to two locations in China. In April, the same competitor signed a contract for 23 more systems to be delivered before the end of this year; some of the equipment will be used on an 800-kilometer route between the eastern Chinese cities of Nanjing and Wuhan. The equipment is the direct product of Israeli technology, and the company has sold identical systems to many customers, including the national telephone companies of both Germany and France.

Although this equipment exceeds COCOM parameters, there's nothing illegal or improper in Israel selling it, or in China buying it. Israel is not a member of COCOM and is under no obligation to cooperate with its rules. Other non-COCOM countries, such as India, will soon be making similar equipment.

Yesterday, AT&T presented this information in greater detail to the Clinton Administration, in a foreign availability petition filed with the Department of Commerce. Our petition, which was accompanied by these photographs and 400 pages of supporting documentation, shows that high-speed fiberoptics gear is now available from non-COCOM sources.

I hope the Commerce Department will act quickly, because in the competitive marketplace time is running short. AT&T will have lost $110 million in sales by the end of this year due to outdated export controls on transmission equipment, and will lose an additional $50-100 million annually through the end of the decade if controls are not removed. By then, annual worldwide purchases of transmission equipment will have reached $5 billion, and Russia and China will be two of the world's largest markets. If COCOM rules continue to prevent AT&T from competing on equal terms in such large markets, our future revenue growth and ability to sustain employment levels will be at risk.

President Clinton can promote democracy and U.S. economic interests by seeking the elimination of all remaining export controls on telecommunications for civilian uses in Russia and China. In 1990, and again in 1991, this committee passed legislation which would have required just that. We hope the new Administration, which is now conducting a policy review on COCOM, will agree with Congress and industry on the need for major changes.

Mr. Chairman, more than a half-century ago Joseph Stalin tried to limit the spread of modern telephone technology. Now, at the dawn of a new age, it's time to change COCOM rules that do the same thing.

Thank you.

AMERICAN ELECTRONICS ASSOCIATION

STATEMENT OF MR. TIM DWYER
VICE PRESIDENT AND GENERAL MANAGER
OF INTERCONTINENTAL OPERATIONS
AND
MR. JOHN GAGE
DIRECTOR OF THE SCIENCE OFFICE

SUN MICROSYSTEMS, INC.

ON BEHALF OF THE
AMERICAN ELECTRONICS ASSOCIATION

TO THE
SUBCOMMITTEE ON ECONOMIC POLICY, TRADE
AND ENVIRONMENT

HOUSE COMMITTEE ON FOREIGN AFFAIRS

JUNE 9, 1993

STATEMENT ON BEHALF OF THE AMERICAN ELECTRONICS ASSOCIATION BY TIM DWYER, VICE PRESIDENT AND GENERAL MANAGER AND JOHN GAGE, DIRECTOR OF THE SCIENCE OFFICE SUN MICROSYSTEMS, INC.

HOUSE FOREIGN AFFAIRS SUBCOMMITTEE ON ECONOMIC POLICY, TRADE AND ENVIRONMENT

JUNE 9, 1993

Introduction

Mr. Chairman, members of the subcommittee, I am Tim Dwyer, Vice President and General Manager of Intercontinental Operations at Sun Microsystems, Inc. Accompanying me is John Gage, Director of the Science Office of Sun Microsystems Laboratories. On behalf of the American Electronics Association, we appreciate this opportunity to testify on the subject of computer export controls before the House Foreign Affairs Subcommittee on Economic Policy, Trade and Environment.

Sun Microsystems is #146 on the "Fortune 500" list, has sales of $4 billion per year and derives 50 percent of that revenue from exports. Sun is the second largest Fortune 500 exporter, as a percentage of sales, after Boeing.

The AEA represents 3000 high technology companies from around the country. Our members are involved in virtually all sectors of electronics, including: computers and peripherals, semiconductors and semiconductor manufacturing equipment, telecommunications, software, test and measurement instruments, and aerospace, among others. The electronics industry employs 2.3 million people in the United States, more than automobiles, steel and aerospace combined. Many of our small, medium and large companies derive fully half of their total annual revenues from export and overseas sales. Exporting, needless to say, is a key component to the growth strategies of high technology companies.

Summary

Mr. Chairman, if the Committee were to come away from this hearing with one message today, it should be this: U.S. export control policy is nurturing foreign competition by denying the U.S. computer industry access to foreign markets that are open to our non-COCOM competitors. This is a policy that cannot prevent or control the spread of technology, does not help this country's economic security, and is not effective in protecting our national security because the technology is available from many sources around the world.

How is this happening? In the following ways:

1. COCOM continues to require validated licenses for exports of personal computers, workstations and higher-powered computers, even though non-COCOM countries such as Taiwan, Korea, India and others make these same machines and export them without the restrictions imposed by the U.S. and COCOM countries. COCOM is continually behind the technology curve.

2. Controls on exports of computers that the U.S. Government arbitrarily defines as "supercomputers" have exhausted high performance computer companies with onerous and costly conditions for export. Now these controls are going after lower-level workstations and even personal computers that are increasing in power and bumping up into the "supercomputer" definition. The costs to the customer of complying with these conditions could in some cases equal or exceed the cost of the computer itself.

3. The U.S. Government continues to unilaterally control computers for nuclear proliferation reasons in spite of an 18-month old international agreement not to control them. The U.S. was a party to this Nuclear Suppliers Group agreement and appears to have changed its mind with no explanation to industry.

All of this is happening at a time when the American computer industry is facing a challenging competitive environment. Over the past two years, the industry has seen sluggish sales and lower profits, a 10 percent work force reduction, a trade deficit increase from $845 million to $5 billion between 1991 and 1992 and a 17 percent drop in the share of world market revenue. The government's answer? 1992 exports of computers required 8,700 license applications for approval by the government, representing $10.2 billion worth of sales. That's more than one third of all export licenses required by the government and almost one-half the total value of exports requiring some form of license.

Potential lost sales from export controls are difficult to quantify, but we do know that many smaller companies are so daunted by the complexity of the regulations that they simply forego attempting to enter foreign markets.

While export controls are not the sole cause of the industry's difficulties, the existence of a system that we argue is: (1) counterproductive to the health of the industry and (2) ineffective in meeting its security objectives, does nothing to help us at a time when the Clinton Administration has pledged increased attention to technological and economic competitiveness.

What we need is a rational export control system that does not impose unnecessary costs on our industry nor put us at a competitive disadvantage relative to our foreign competitors. The fact of the matter is that advanced computer technology rapidly becomes commodity and consumer technology, as the hardware, software, and skill sets required to build and operate mid- to high-range machines diffuse throughout global markets, rendering export controls ineffective.

Overview of computer export controls

Let me start this discussion with a brief overview of the export control regimes that the computer industry must deal with in its day-to-day operations.

COCOM

The U.S. and its COCOM allies currently require an export license for any computer operating above 12.5 million theoretical operations per second (MTOPS). This is the level of a personal computer. Anything below that is considered "decontrolled." This has been in effect since the latest COCOM control list went into effect in 1991. In some areas we have seen a ten-fold increase in computer technology since that time and it spreads around the globe like a commodity.

For the past year, COCOM has been arguing over whether to raise the decontrol level to 25 MTOPS. This will be obsolete even before it goes into effect. Countries such as India, China, Taiwan, Korea, Singapore and Brazil are now churning out systems in the 50 MTOPS range and above. And exports of these systems don't require licenses from these governments. That's the key to this problem: they don't have the same controls as we do, if they have any at all.

And I don't believe they will truly conform to COCOM controls, no matter how hard our government tries. I say this for two reasons: 1) these economies are export driven. If they don't export, they remain third world countries. They put into practice the notion that economic security is vital to a country's national security; and 2) they correctly believe that commodity-level technology is inherently uncontrollable. It moves quickly, broadly, and anyone who really wants it can get it.

AEA strongly believes that export controls on computers and other industries need to be dramatically revised and streamlined in the wake of the Cold War's demise.

The industrial countries have publicly recognized that a modern communications and information infrastructure will nurture economic development and democratic reforms in former Communist countries. President Clinton acknowledged this personally during his summit meeting with President Yeltsin in Vancouver when he called for a "phased movement" in the reduction of export controls to the newly independent states.

The solution to this problem is to: 1) immediately remove controls on commodity level goods, and 2) constantly adjust controls to keep pace with the dynamic advancements and global diffusion of computer technology. The Commerce Department is currently analyzing this growing foreign availability, which I will discuss in more detail later

Supercomputer controls

Turning to the issue of supercomputer controls, our industry is subjected to two serious problems:

1. Some time ago, the government decided that special supercomputer export controls should be imposed on machines that operate at 195 MTOPS. A computer at this level is a workstation that fits on or beside a desk. Current true supercomputers operate at about 20,000 MTOPS, or 100 times the speed requiring controls.

2. These special controls consist of complex and costly security conditions that are imposed on both customers and exporters. For example, every time we want to sell a high performance computer overseas, our customers, depending on what country they are in, could be required to:

- station a 24-hour guard around the computer;
- station a representative of the exporter by the machine to ensure proper use;
- obtain prior approval of the commerce department anytime different software is used;
- severely limit or deny networking and other functions that are necessary activities in normal computing environments;
- restrict access to the machine by certain foreign nationals, even at universities, where open learning environments are the standard of academic life.

These are just samples. There are 30 other written safeguards -- plus others which may not be written in the regulations and are therefore impossible to plan for. These conditions run into the tens of thousands of dollars per computer to implement, for both workstations and higher performing machines. This control system frequently requires suppliers, customers and the governments to undergo many months of negotiations to agree on conditions. Ultimately, customers have in many cases thrown up their hands and gone elsewhere.

We note that when the rules on supercomputers came out one year ago, then-Secretary of Commerce Barbara Franklin promised that the regulations will affect "only the most capable computers." Instead, the rules now in effect are restricting computers that operate at one percent of the most capable machines.

I'm sure I don't need to remind this committee that Congress, in the last iteration of the Export Administration Act, which was vetoed in 1990 by President Bush for unrelated reasons, passed a provision that established an indexing system for defining a supercomputer for export control purposes. I understand it was the leadership and foresight of this committee that got the provision approved by the Congress. If implemented, this provision would right now require the government to define a supercomputer at approximately 4,000 MTOPS. Instead, we are still at 195. This was the number the last administration came up with after failing to adopt an indexing system by the summer of 1991 as it had promised.

The bottom line is: these controls are seriously impeding the ability of U.S. companies to sell leading-edge high performance computers in the global market. A number of firms have invested heavily in high-performance chips and systems and must gain wide user acceptance early in the life cycle of these new products in order to ensure future sales. Supercomputer controls, by creating an artificial advantage for lower-performance foreign products, impede this initial acceptance and penalize U.S. companies for being at the leading edge of computer technology.

Nuclear Suppliers Group

AEA is frustrated that our government continues to control the export of computers for nuclear proliferation reasons. They do this in spite of agreement early last year by the 27-nation Nuclear Suppliers Group, as well as testimonials from informed experts, that dual-use computers do not represent a critical enabling technology to nuclear proliferation activities and should not be controlled for nuclear reasons. The U.S. agreed to this, then failed to implement it. To this day, our government continues unilaterally to control computer exports for nuclear proliferation concerns.

It is not our intention here to downplay the importance of nonproliferation export controls. On the contrary, AEA strongly supports the need for an effective non-proliferation policy. But if unilateral controls only hand over dual-use business to our foreign competitors and do nothing for this country's security, then we're the only ones who lose.

Let me give you an example. A three-year, government-imposed delay in the sale of a Cray computer to a weather research office in India resulted in the Indians actually developing their own machine out of frustration. Now, American high performance computer manufacturers have a new competitor in India, the Param. This is a direct result of U.S. export controls. Due to this shorted-sighted policy, the U.S. Government lost the ability to control the end use of this technology and prevent diversion to unacceptable countries, and American manufacturers lost the market.

As I mentioned before, the rapid diffusion of technology that results in the foreign availability of computers outside of COCOM or other control regimes is a primary reason that export controls on computers and other technology are ineffective.

Foreign availability

Foreign availability is an issue I would submit the committee needs to watch closely over the next two months. In February, AEA formally requested the Commerce Department to undertake a foreign availability assessment of competing workstations being manufactured in and exported from non-COCOM countries. This study is to be completed in July with an announcement in August. An affirmative finding would require the U.S. to propose that COCOM decontrol computers at the level found to be foreign available. Commerce could potentially find workstations available at 206 MTOPS, which is ironically above the current supercomputer level. The results of the study will have extremely important implications to the computer industry.

Let me take a moment to describe how the computer industry operates, at least from Sun's perspective, and how we justify the need to decontrol commodity-level technology.

Today's open computer architectures make it simple and inexpensive for foreign competitors to produce "clones" of U.S. computers without performing significant R&D or having access to any proprietary U.S.-origin technology.

In Sun's case, our "SuperSPARC" chip, which has a power of 53 MTOPS and serves as the basis of our full line of workstations, is manufactured by Texas Instruments and shipped in volume under general license to companies in Taiwan and Korea, among others. Companies there take an average of 3-5 months to put operational systems around those chips; i.e., to build a clone.

Moreover, the workstations that Sun builds and exports, for example, allow the user to snap in 3 more SuperSPARC chips (each about the size of a silver dollar). Like the assembly of a "Lego" kit, a mid-level workstation can be turned into a machine that exceeds the power defined by the government as a supercomputer.

The point is that we can't prevent the development of technology and we can't control its dissemination. Last month, Sun was informed by our distributors in Moscow and Beijing that the Tatung Company, a Taiwanese manufacturer of Sun clones, has these 4-chip machines in stock in Moscow and Beijing for sale. They offer volume delivery in ten days. This is a serious problem for Sun and other multiprocessor companies. We invented the technology but can't compete on a level playing field with foreign clone-makers.

Meanwhile, the Defense Technology Security Agency, an arm of the Defense Department, has told us and other companies that they will hold up licenses for multiprocessor computers for export to Russia and China unless we cripple them by limiting the computing function to one processor, even if it has multiprocessor capability. Imagine ordering a four cylinder car and when it's delivered, there's only one cylinder under the hood and all you can do is 30 miles per hour. And of course, Tatung can offer same day delivery of an exact clone, with the exact computer chip and the exact operating system that Sun would offer.

In another example, Intel has just announced its new Pentium chip, which is the next step up from the popular 486 PC. The initial models of this chip come in either 60 MTOPS or 67 MTOPS. Intel has stated in press reports that it will be shipping hundreds of thousands of chips this year to computer manufacturers here and abroad and expects to cross the one million mark in 1994. In addition, the Pentium processor is designed with the features necessary to accommodate multiprocessing configurations.

Ultimately, the workstation and PC industry is going to multiprocessor systems. The technology is fluid and rapidly becomes generic. The processors and software used in these computers are essentially decontrolled. The designs for building the box they go in is available in most technical bookstores. It's basically in the public domain. Trying to control the export of commercial technology out of the U.S. And COCOM countries just forces manufacturing and jobs overseas.

The bottom line is that, had the government accepted AEA's proposal one year ago and persuaded COCOM to decontrol computers at 50 MTOPS the industry would have been required to submit 5,000 fewer license applications worth approximately $2.2 billion in exports, according to 1992 licensing data. Now that foreign clone makers have multi-chip configurations that can raise a workstation up to 206 MTOPS, decontrol of these systems would mean 7,627 fewer license applications worth $8.5 billion in exports.

The Commerce Department last summer in fact found foreign availability in preliminary research that corroborates our evidence.

Among the agency's findings:

- workstations above current export control levels are produced in Brazil, China, India, South Korea, Singapore and Taiwan.
- high-powered multiprocessing workstations, though produced in small quantities, are available to Newly Independent States from non-COCOM sources.
- truly effective export controls on workstations may be illusory because they are marketed through such diverse methods as retail stores, wholesale distributors, value-added resellers, mail order, kits, and end-user upgrades
- workstations from 25 to 90 MTOPS are available non-COCOM countries. Workstations with dramatically higher performance are likely to become available from non-COCOM producers over the next 12-24 months.
- U.S. manufacturers may lose technological leadership in workstations if current control levels are not adjusted to reflect current market realities.
- non COCOM producers of supercomputers exist in Russia, Ukraine, and India [and since this study, China].
- some upward revision of the definition of "supercomputer" in the supercomputer control regime must be considered because failure to do this will adversely impact the

sale of U.S.-made high-end workstations. Current supercomputer controls will have little effect in preventing availability of similar machines from non-COCOM suppliers.

To reiterate, the data from which the Commerce Department drew these conclusions are more than a year old. Given the life cycle of this technology, these numbers are dated.

While AEA is looking to the foreign availability assessment to push the process forward, it is our opinion that the foreign availability procedure in general is flawed because it assesses only a snap-shot in time. It does not anticipate technology that is in the pipeline and due to be on its way to foreign users and producers in the near future. Instead, these reviews only look at history. The resulting policy changes, to the extent they occur, tend to provide relief only for obsolescent technology.

Thus, fundamentally, an export control policy that is sensitive to competitiveness must anticipate advances in technology and foreign market share, and devise an indexing system that runs independently of the aching gears of multiple bureaucracies.

In sum, Mr. Chairman and members of the committee, AEA believes that the time is right to break down the myths of the military criticality of computers and the myth that the U.S. is the sole source of this technology. The time is right to recognize where the industry is headed worldwide. I can tell you that the U.S. computer industry will be headed downward if we don't implement a government policy that capitalizes on this administration's commitment to U.S. technological leadership.

Thank you.

TESTIMONY OF DR. JANNE E. NOLAN

SENIOR FELLOW, THE BROOKINGS INSTITUTION

BEFORE THE SUBCOMMITTEE ON ECONOMIC POLICY, TRADE AND ENVIRONMENT
COMMITTEE ON FOREIGN AFFAIRS
U.S. HOUSE OF REPRESENTATIVES

JUNE 9, 1993

I commend the members of this Subcommittee for undertaking the ambitious initiative of trying to recast the foundations of US export control policies.

My remarks will focus in particular on the challenges posed by the international proliferation of technologies for producing weapons of mass destruction, and the domestic policy-making apparatus which exists to address this problem. The essential proposition is simple. The current system of export controls does not work -- either to stem proliferation or to protect American industry from needless intrusion on legitimate trade.

It is widely agreed that there are three key priorities in the current non-proliferation agenda:

0 Averting the spread of destabilizing weapons and technologies from the former Soviet Union;

0 Constraining and reversing the spread of nuclear, chemical, and biological weapons, missile technologies and destabilizing conventional arms to other regions;

0 Securing advanced US technology from unplanned and unwarranted proliferation while maintaining a high level of US competitiveness.

The window of opportunity for slowing and ultimately stopping efforts by hostile or unstable countries to acquire independent means to produce and deploy weapons of mass destruction -- e.g., Iran, North Korea, Syria, a renewed Iraq -- may be no more than three to five years. Given current trends in policy, however, efforts to counter these developments will be quickly outstripped. Weaknesses in the US policy apparatus for technology transfer controls have been accentuated by the rapid changes and growing complexity of the international technology market.

Why is this the case?

I. Export controls are based on the idea that there are identifiable technologies which contribute to proscribed military capabilities, and that the transfer of these technologies can be controlled by sovereign governments. The institutional apparatus which exists today for the control of weapons still reflects a world order in which these premises pertain.

But commercially available components of military significance, including guidance and telemetry equipment, satellites, and computer technology, contribute increasingly to developing countries' capacity for independent or quasi-independent weapon production programs, as they do in the advanced countries. Many countries are proceeding with military production programs with the assistance of an expanding international system of commercial entrepreneurs, in an elaborate pattern of military trade which operates largely outside of US or any other government control.

II. Emerging defense technologies are making the difficulty of differentiating among military and civilian exports even more pronounced. New technologies which are at the cutting edge of Western military modernization, including, inter. alia., advanced information processing, composite materials, directed energy systems, and biotechnologies are to varying degrees equally vital to civilian modernization. Advances in biotechnology for super-lethal pathogens usable in biological warfare, for instance, also could be used to develop more cost-effective and efficient agricultural techniques and medicines where they could have very positive effects on stability in countries where poverty and disease are important determinants of social unrest.

III. Governments currently place restrictions or prohibitions on technologies which have legitimate uses, like space launch vehicles or computers, but when forced for political or commercial reasons to make exceptions lack the means to monitor the disposition of that technology after sales have taken place. This is the worst of all worlds: unenforceable export controls with no ability to monitor the destination or uses of transferred technologies.

IV. The spread of advanced chemical, biological, and conventional weapon manufacturing capabilities exemplify the inherent weaknesses of supply-side controls for weapons readily produced with dual-use technologies. The maturation of developing countries' economies, coupled with the growing commercialization and internationalization of the technology market, virtually guarantee that countries determined to acquire these capabilities will do so unless US and international policy is changed. Given current trends, the pace of international technical diffusion may eventually render controls on supply ineffectual for all but the most highly advanced products.

V. The evolution of the international technology market has not been accompanied by commensurate changes in the policy or bureaucratic apparatus. The complex jurisdictional structures established for promoting or restraining technology transactions remain a highly stratified bureaucratic regime rife with discontinuities and contradictions, no clear sense of purpose, and little coherent leadership.

WHAT ARE THE MAJOR WEAKNESSES OF THE CURRENT SYSTEM?

The real challenge yet to be addressed in the US is to how preserve superior military capabilities and a healthy industrial base without a chronic dependency on exports of the kind which accelerate technical diffusion beyond what is prudent. An effective non-proliferation/export control strategy for the future will require an institutional framework in which the setting of policy priorities can be made compatible with other pressing national objectives -- including economic competitiveness, investment in high technology, intelligence priorities, the US defense posture, regional security relations, and the need to reduce global tensions on a scale which will make overall domestic revitalization possible.

But in the current system, non-proliferation is still seen to be a competitive priority, which somehow detracts from commercial, diplomatic or other objectives:

I. Decision-making authority for non-proliferation is currently fragmented across almost a dozen agencies -- State, Defense, ACDA, the Department of Energy, CIA and the other intelligence agencies, Commerce, Treasury, and the NSC. The new administration has undertaken some important steps to rectify this situation, and has undertaken a comprehensive review of Executive Branch resources available for addressing these problems.[1]

II. The outcome of deliberations over technology and arms sales often is influenced by such factors as the relative clout of the agencies involved, the perceived importance of the recipient in domestic political terms, and even the expertise or endurance of individual participants involved in evaluating cases. Bureaucratic warfare, rather than analysis, tends to be the *modus operandi*, in what is often a protracted process of plea bargaining and political compromise which may or may not reflect long-term national objectives. This is particularly the case when there is no unanimity about US objectives at the highest levels of policy-making, as is now true in most areas of US technology transfer policy.

---

[1] Among positive steps, the administration has elevated non-proliferation to the level of a directorate in the National Security Council, has consolidated important non-proliferation functions within the Departments of State and Defense and in the Central Intelligence Agency, and has made clear through the new CIA Director James Woolsey that the monitoring of technology for non-rpoliferation is a critical intelligence priority.

(To the extent that biases can be summarized across Cabinet agencies, the State Department typically will be more concerned about the adverse political and diplomatic effects of turning down requests for arms, while the Department of Defense and its constituent agencies tend to focus on the effects on military capabilities of recipients, and the costs or benefits of arms exports for US military planning. The Commerce Department, which has played a more salient policy role as the content of trade has shifted towards a greater emphasis on commercial technologies, tends to protect American economic competitiveness and often opposes export controls on these grounds.)

III. International defense trade controls have typically been imposed by the US government without prior consultation with industry. One result has been industry antagonism and efforts to undercut unpopular policies through

Congress or the media. But industry has a potentially vital role to play in future restraint regime.

As the main source of expertise about technology and usually the party most involved in actual transactions, industry may be the only means by which governments can track and enforce restrictions on exported products. Industry assistance could be use to identify relevant technological inputs for particular proscribed technologies and helping devise safeguards and other end-use restrictions to prevent the diversion of civilian or dual-use equipment to military application which cannot be controlled by export restrictions.

IV. Supplier restrictions still have a critical role to play in identifying and targeting a few of the technologies pertinent to weapons development. Many vital inputs for nuclear or missile development, such as advanced guidance needed for missile accuracy, remain in the hands of just a few suppliers, and nuclear commerce can be segregated from routine trade. But the enforcement of these restrictions has been weak and sporadic. Today, the penalties for illegal technology trade are much lower than those imposed on violators of banking or securities regulations.

CONCLUSIONS

-- The US needs export control policies which are in sync with a technology market in which there are many channels of supply, where many advanced technologies which can contribute to weapons development have wholly legitimate applications, and when economic imperatives demand a competitive trading system.

-- The growing weakness of supply-side controls argues for a control system which begins to shift the focus away from controls only on exports to controls on the actual application of technologies. Such arrangements would require far greater levels of transparency in the international trading system, and a system of cooperative enforcement among like-minded states to verify compliance and to isolate and penalize violators.

-- The US also needs policies which recognize that economic competitiveness and non-proliferation can not only co-exist but be harmonized. Proliferation controls affect a marginal percentage of high technology trade. Controls will be supported by industry if specific, coherent, and implemented without cutting drastically into profit margins.

-- Foreign clients will need a balance of positive and negative inducements to comply with national and international policies guiding technology exports. Most countries will not be coerced into joining an international non-proliferation regime. With the exception of obvious outliers like Iraq, most nations need positive inducements which reflect their self-interest, not edicts or threats.

-- Efforts to counter proliferation need to be coordinated to take advantage of all forms of US leverage, from economic inducements to intelligence operations to military operations, if necessary. The US government has the resources to identify and target the most significant violators of export laws, to severely impede or even cripple illegal supplier networks, and to make clear that the costs of violations are high -- but only if clear authority is given to the intelligence agencies, the Department of Defense and other key agencies to pursue such a strategy.

-- Multilateralism: The US is far from alone in contributing to the spread of dangerous trchnology, and cannot pursue effective policy without cooperation from other states -- developed and developing. It is time to move the issue of export controls from the realm of politically controversial national burdens to an internationally share obligation.

-- Regional diplomacy -- the demand side: Regionally-based technology control/non-proliferation arrangements (in South Asia, South America, the Middle East) best reflect countries' security interests and are the most effective foundation for promoting restraint in weapons development. Supplier instruments which fuel perceptions of discriminatrion may hinder the development of more effective, cooperative schemes which make access to technology contingent on open disclosure and transparency.

The majority of countries support non-proliferation and want a stable security system. The US can lead the way to a global cooperative security regime in which the advantages of cooperation (access to technology, security guarantees, political stature, etc.) obviously exceed advantages sought through military aggression or lawlessness.

-- In the final analysis, proliferation and export controls are an economic and industrial issue. The extent to which defense-related technological innovations may require exports to defray their cost, as such, and the associated risks that highly lethal technologies could proliferate suggest that non-proliferation policy must be crafted prior to decisions guiding defense investment. The cost of innovations and the dangers of the latter's proliferation need to be integrated into decisions as to whether or in what way not to acquire new capabilities, and the pace at which they should be procured.

It must be recognized that many of the traditional instruments for controlling the diffusion of dual-use technologies for weapons of mass destruction, advanced delivery vehicles, and their necessary support services by denying access to materials and information have been undermined by technical diffusion and changed political imperatives. Increasingly, national choice, not technical access, will become the decisive factor.

TESTIMONY

of

Benjamin H. Flowe, Jr.[1]

before

The Subcommittee on
Economic Policy, Trade and Environment
of the
House Committee on Foreign Affairs

June 9, 1993

Mr. Chairman, thank you for inviting me to testify today in connection with your work on reauthorization of the Export Administration Act. With your permission, I would like to submit my written testimony for the record and present a brief summary at this time.

The Center for Strategic and International Studies ("CSIS") project on *Export Controls in a Changing World* has been addressing how the export control systems can be improved to help meet national security and foreign policy objectives without needlessly damaging the U.S. economy. As an outgrowth of its bipartisan *Strengthening of America* project, CSIS has assembled an extraordinary Steering Committee comprised of experts with both practical and theoretical grounding in the subject, including prior executive and legislative branch officials, industry representatives, and expert academics. The final report of the Project will be issued in the near future. My testimony today is directed towards legislative issues and is based upon deliberations of that Steering Committee. However, what I have to say does not necessarily represent the opinions of all members of the Committee. (I have also attached a copy of that Project's Transition Paper, *Export Controls and Nonproliferation* (Dec. 15, 1992), that was addressed at what the Clinton Administration should do on its own.)

---

[1]. Benjamin H. Flowe, Jr., is a partner in the Washington, D.C. based law firm, Verner, Liipfert, Bernhard, McPherson and Hand, Chartered, and practices law in the field of international trade with a particular emphasis on export licensing. He is testifying on behalf of the *Export Controls in a Changing World* Project sponsored by the Center for Strategic and International Studies in Washington, DC.

During the Cold War, the United States and its allies agreed that mutual interests would be well served by restricting the flow of militarily useful goods and technologies to the Warsaw Pact countries. COCOM based multilateral export controls in that era were relatively successful and made an important contribution to ending the Cold War. But, the end of the Cold War has not meant an end to our use of or perceived need for export controls. Export controls, at least in principle, continue to play a role in advancing the nation's interests.

Today, our national well-being is threatened more by the proliferation of the ability to use modern weapons and weapons of terror. What we call the "proliferation threat" is not new nor has it grown appreciably in the last few years. Rather, the diminished threat from the old Warsaw Pact and intelligence gained after the war with Iraq have dramatically increased the relative importance of the proliferation threat and the political will of nations to address it. We also continue to have strategic concerns about the states of the former Soviet Union as well as China, so we maintain a level of controls on exports to those destinations. In addition, we continue to use export controls as a means of protesting the policies and practices of other countries and to press them to change.

While there are strong reasons for maintaining some system of export controls, that system should be reformulated and applied with certain key principles in mind. Some of these principles are very close to those that have guided the evolution of the current control system; others are new and reflect changes that have occurred in the world's political climate after the Cold War and the war with Iraq. The CSIS Project has addressed four broad categories of the guiding principles for export controls: *the purposes and objectives of controls; the effectiveness of controls; the costs of controls; and the rights of persons to export*. These are not mutually exclusive, and there is a considerable amount of overlap and interconnection among them.

Purposes and Objectives of Controls:

Export controls have been imposed for many purposes to help fulfill many objectives. It is critical to define clearly the purpose and intended benefits of export controls and to consider them in the context of what additional tools are to be used to accomplish such purposes.

For example, export controls have a legitimate role to play in limiting the ability of foreign entities to acquire and use weapons of mass destruction or terror. However, they are certainly not the only tools to advance our national security interests, nor are they our best.[2] They also can be used in protesting the policies and practices of foreign entities and in trying to persuade them to change, although historically they have not been very successful in accomplishing such a change (as in the case of the Haitian embargo).

As we will note later, the United States acting alone has almost no power at this time to deny a foreign entity access to the products of modern technology. Therefore, our ability to achieve the objectives of controls unilaterally is severely limited (unless we admit that the purpose of controls is simply symbolic -- to distance the U.S. from a country despite the U.S. economic costs of doing so). In no case should export controls imposed by the United States be the sole, or even the most prominent, tool to accomplish these purposes.

Export controls are all too convenient for government officials to impose and often are the first reaction chosen without a careful balancing of their intended effects and likelihood of achieving their purpose with their unintended but likely consequences. Instead, export controls should be used only as part of a well thought out, comprehensive response to a well understood and clearly described need. The national response should focus primarily on a full range of diplomatic efforts, economic sanctions, and, where appropriate, military action. Only when export controls hold realistic promise for success should they be invoked and then only as adjuncts to more appropriate tools for advancing foreign policy and national security interests.

---

[2] Other methods include many types of diplomatic, economic and military alternatives. For a reference to some of these other methods, see GAO Report NS14D-86-172, Export Controls -- Assessment of Commerce Department Foreign Policy Report to Congress, App. III (Aug. 1986), and the range of sanctions in recent nonproliferation sanctions laws and bills.

Effectiveness of Controls:

Effectiveness of export controls in achieving their intended purposes should be the primary criterion in establishing and using export controls. If a control cannot or will not be effective enough so that the actual benefits outweigh the costs, it should be abandoned.

Unilateral controls are, almost without exception, destined to fail. Today, almost all the products and technologies we want to control are available from foreign sources. In the few areas where the U.S. has the technological lead, export controls that operate unilaterally have the effect of hindering U.S. sales while competitors catch up. You have heard testimony today on how this is happening right now in the fields of supercomputers and workstations. While a unilateral control may allow us the illusion that we are dealing adequately with a situation, in fact, such controls cause much more damage to U.S. interests than any benefits yielded.[3]

To make a control effective, it is axiomatic that all significant suppliers must apply similarly effective controls. This implies that all significant suppliers must coordinate their control activities. Where significant suppliers do not and, despite our best efforts, will not cooperate in controlling exports, or where targets of controls are themselves suppliers of the controlled items, the controls cannot be effective and should not be applied by the United States.

---

[3] This is hardly a new story. After hearings by this Committee and others, Congress in 1988 amended Section 5 of the Export Administration Act to constrain the overuse of unilateral controls, with some flexibility to apply them in appropriate circumstances. There has been a reluctance to remember the lessons learned by 1988 in the recent application of unilateral controls under Section 6 for nonproliferation reasons. We should remember that when the constraints were imposed under Section 5, the Warsaw Pact was at least as great a threat as those we face today -- the lessons learned should not be ignored.

Some items are inherently difficult to control. Some are so small that they defy detection. Others, such as software, are embodied as much in ideas as in tangible items. Some can be easily replicated, so that the leakage of one or two of them can make the control ineffective. And some items are treated by the marketplace as commodities and are in such widespread commerce that controls cannot be effective. The requirement for an effective control demands that the item be controllable.

Another source of ineffectiveness is the sheer span of the controls. We sometimes try to control all the items that would contribute in any measure to a capability we wish to deter. Overly broad controls that criminalize normal business behavior undermine respect for those controls that truly matter. A better, and ultimately more effective, approach is to limit the application of controls to those items that are critical to that capability -- "choke point" items -- and to raise the penalties for violations of clearly defined controls.

Congress has recognized the futility and the costs to the nation of trying to control U.S. exports of items that are available from unrestricted foreign suppliers. To address this problem, Congress in the mid-1980s established the "foreign availability" process. That program is a sensible way of analyzing whether controls have lost their effectiveness. Personal computer decontrols are a good example of how this system worked well. While Congress and this Committee deserve considerable credit for legislating this analytical approach to a difficult issue, it needs substantial refinement. The practical success of that process has been limited by several factors: (1) there has been significant opposition within the Administration to decontrols forced by a low-level office within the Department of Commerce; (2) the mandatory decontrol process has been limited to "national security" controls -- this and other limits legislated on national security controls to prevent repetition of past mistakes, such as unilateral controls, have motivated administrations to shift new controls to the "foreign policy" category;[4] (3) the process has become overly prescriptive and bureaucratic; and (4) perhaps of greatest significance in the current context, the process is retrospective only and does not provide any analysis or action until after the damage to U.S. economy is already well under way and the foreign sales that have already caused lost U.S. industry market share (and hence jobs) can be proven in fact.

---

[4] The distinctions between "Section 5 - national security" controls and "Section 6 - foreign policy" controls are largely artificial. Preventing proliferation of weapons of mass destruction is no less a national security issue than was limiting the military might of the Warsaw Pact. Revised legislations should develop a paradigm that synthesizes the useful elements from both sections into one comprehensive framework.

The foreign availability process is nevertheless an excellent basis upon which to construct a more successful process for assessing and maintaining the effectiveness of export controls. In particular, the establishment of a high level body (reporting directly to the Under Secretary of Commerce for Export Administration, for example) charged with assessing all aspects of the effectiveness of controls, upon their imposition and at prescribed time intervals, and recommending (with mandatory effect) actions either to make the controls effective or to abandon them, could improve the current foreign availability process. This new body would analyze foreign availability as one aspect of effectiveness, but would also look at basic controllability (i.e., are the items that we seek to deny to target countries or end-users in fact capable of being denied), and would try to assess effectiveness in an anticipatory mode to help us do better than merely react to harm after it has been done. The effectiveness function should also be charged with the responsibility for initiating technical discussions with foreign sources in order to ascertain and enhance the likelihood of their cooperation.

Here is one example of how this effectiveness function might be applied to the three part Enhanced Proliferation Control Initiative ("EPCI"). The first two parts of the EPCI controls address key items that can be used as precursors to chemical and biological weapons and keystone equipment that can be used to develop them. In those areas, as with critical missile technology and nuclear weapons technology, there has been remarkable success in achieving multilateral agreement on the scope of the controls, with the one major exception that the U.S. is the only member of the Nuclear Suppliers Group imposing export controls on computers for that purpose. An effectiveness paradigm would provide a framework for analyzing the extent to which these items that have been identified as "choke point" technologies are in fact being denied or are capable of being denied to target countries and the extent to which these multilateral controls may need to be refined, enhanced, or even in part scrapped. In contrast, this analysis would likely find severely wanting the catch-all EPCI restriction that prevents the export of anything, from potato chips to signal processing chips, to destinations of proliferation concern. This "knowledge" based control is wholly unilateral, covers many things totally incapable of being controlled and that can make no material contribution to the end-uses and end-users of concern, and is almost impossible for U.S. industry and the government to administer or enforce effectively. The costs of compliance to law abiding companies that are unlikely to make any material contribution to the targets are enormous by comparison with the benefits, which themselves lack focus.[5] This is only one view of how this analysis might play out. The most important point is that such an analytical framework, as an extension of current requirements, should provide an improved basis for continuous reassessments of the pluses and minuses of given controls.

During the Cold War, COCOM was relatively effective in coordinating controls among the significant suppliers of most items we wanted controlled to the Warsaw Pact countries. In response to new export control objectives that fall outside the traditional COCOM purview, several other multilateral regimes have come into existence. The Missile Technology Control Regime attempts to stem the proliferation of the most important missile capabilities. Its success has not been objectively evaluated, but indications are that proliferation of missile capability continues. The Australia Group deals with the proliferation of certain chemical and biological weapons. The Nuclear Suppliers Group has addressed critical dual-use nuclear technologies. Several other specialized multilateral groups deal with supercomputers and other specific items or technologies. The recent success of these groups in agreeing to common lists of controlled products and technologies has been a remarkable achievement of U.S. led negotiations, thanks in large part to the threats exposed by the war with Iraq. However, none of these groups yet have (and may never develop) practical agreements on the structure, uniform application, and enforcement of export controls. None of them has established the broad but well defined collaboration we find in COCOM. Despite its limitations, the prospects for expanding COCOM membership and coverage hold greater promise for the needed multilateral cooperation than trying to make the other groups more effective.

---

[5] Legitimate companies are not concerned with potential liability for any intentional conspiracy to assist in development of weapons of mass destruction because few if any would do so. Rather, under the catch-all EPCI standard, they are concerned with avoiding even the potential of a prosecution using 20-20 hindsight and pieces of data held by, say, several clerks that might be used to construct a case that the corporate entity had reason to know that commodity products would be used in a weapons facility.

The Costs of Export Controls:

We need to evaluate formally the potential and actual economic costs of export controls to balance the decisions on whether to implement or maintain them.

Although export controls are easy to impose and the costs to the government of operating the control system are relatively small, they have an economic impact on the nation's exporting community many orders of magnitude greater. The costs of export controls include not only the lost sales, but also direct effects on jobs and ripple effects on suppliers, loss of any chance for follow on sales, loss of parts and servicing sales, loss of sales to third parties who can buy unrestricted products from other suppliers, the expense of maintaining a good legal compliance program with attendant manpower, materials, training, and related expenses, and many others. Today, we can no longer afford to give lip service to such effects because they have far reaching consequences for the competitiveness of U.S. Industry and in turn our national economic health and trade balance. The ASEAN countries, China, and the Middle East, that are the targets of our recent nonproliferation controls already account for nearly $60 Billion in U.S. exports (more than Japan and over half that of the EC) and are our fastest growing export markets.

In the past, we have not formally analyzed the economic impact of controls because this is not required to be addressed by the law and because those costs are very difficult to calculate. We have assumed that the benefits of the controls, as gauged informally by the government, outweighed the costs.[8] But those assumptions do not fit our current circumstances. We cannot simply assume that controls accomplish their purposes and are beneficial. We need a better formalism for defining the intended benefits to the nation from imposing controls. In the same vein, we must find better methods for estimating the costs of controls and for comparing those costs with the intended benefits. Even if our methods of measurement are imperfect, as they will be, a legislative requirement that the costs as well as the benefits be defined and formally evaluated would be a great service to the country.

At this time, attempting to facilitate the conversion of industry from defense to civilian/commercial markets is a high priority issue. We should pay particular attention to the impact of "dual-use" export controls. Defense conversion is difficult enough without regulatory impediments that dull any U.S. competitive edge being applied to the commercial arena without proper justification.

Only where the benefits meet or exceed the costs, both figured on a national scale, should we be willing to accept the use of export controls.

Exporter Rights:

In the United States we consider exporting to be a privilege licensed by the federal government. Other countries acknowledge a right of their people to export. The distinction preserves an assumption in the United States that the government can deny the license to export with a minimum of explanation or accountability. While in practice there need be no real difference in what is controlled or how, the diffusion or responsibility among myriad agencies and the corresponding lack of accountability in government decision-making on export controls leads to inefficiencies, added costs, and uncertainties in the minds of the exporting community. A simple acknowledgement that exporting from the United States is considered to be a right that can be abridged by the government for purposes of critical national importance would be very helpful in making the system more transparent and responsible.

---

[8] From time to time, we have reacted to demonstrated adverse economic impacts of export controls and adjusted. Revisions to the Siberian pipeline controls, creation of de minimis exceptions to reexport controls as a result of foreign companies "designing out" U.S. components, and foreign availability decontrols are examples. Reactions to major political pressure as a result of enormous, demonstrable economic harm have been ad hoc rather than part of any systematic mechanism to assess and address costs versus benefits.

Such a right would imply the right to judicial review (for example, under the Administrative Procedures Act) of the decision-making process. Of course, the government's prerogatives in setting and pursuing its foreign policy and national security objectives would be reserved from judicial review (though not from administrative and legislative debate). Judicial review would be expected to extend only to the application of those government policies in administrative procedures prescribed by law and regulation.

****

In your letter of invitation, Mr. Chairman, you posed four questions and asked for responses.

1. *What are the primary problems associated with the U.S. system of export controls?*

The primary problems are as follows:

- **we establish and invoke controls without consideration of their effectiveness.** Controls that do not accomplish their objectives fail to justify their costs. Foreign availability of controlled items is one factor that undermines the effectiveness of controls. Other factors that render items ineffectively controlled include small size, commodity status, and ease of duplication or reverse engineering.

  Today, there are almost no controlled items or technologies exclusively under the jurisdiction of the United States. Therefore, to accomplish the objectives of an export control system requires effective coordination of controls (and their enforcement) among all significant suppliers. Given the span of the controls across broad ranges of products and technologies at all levels of sophistication, the diverse political and economic relationships among supplying and acquiring entities, and the often incompatible aims of supplying nations, such coordination is now orders of magnitude more difficult to achieve.

- **we fail to consider the costs of controls in light of their benefits.** Export controls penalize U.S. industry in subtle and far reaching ways that go many orders of magnitude beyond the direct costs of lost sales. We do not attempt to gauge these costs either in establishing controls or in exercising them. Where the benefits to national interests can reasonably be expected to justify the costs, the controls are useful. But, just as costs are generally ignored, the putative benefits are not evaluated. There is no doubt that both costs and benefits of controls are exceedingly difficult to measure. Nevertheless, the costs to the nation of impeding the competitiveness of U.S. industry are so great that they cannot be left for evaluation only after significant harm has been done. Inability to quantify these costs in specific dollar figures is not a good reason for failing to conduct any formal and rigorous evaluation of both the costs and the benefits.

- **the bureaucratic structure of the U.S. export control system is so complex that it is counterproductive.** We have a fractured system at all levels that is based on old notions and that has too many interfaces and unclear decision points. The attached list of agencies responsible for administering export controls, interagency dispute resolution committees, and international regimes, all of which overlap greatly, demonstrates this point clearly. If one overlays the flow charts of license processing and policy review procedures among these groups, the confusion of exporters and the reason the export portion of our trade balance is hindered more than import side becomes readily apparent. The process, viewed from the outside, has become opaque and obfuscatory, even for those who specialize in this field. It gives the impression of many cooks who lack proper accountability. The need for independent objective review (e.g. judicial review) has never been greater.

Too much time is spent duplicating effort and defending turf when the various bureaucracies have much more in common than they do in disagreement. The Defense Department, now more than ever, has no desire to pursue controls at the expense of undermining the U.S. defense industrial base. Likewise, the Commerce Department does not want to authorize any export that undermines national security. The balancing of these two goals is a fundamental tenet of those and all the other agencies involved in export controls. The bureaucratic structures that have grown up around what are really only disagreements at the margins have undermined more than served this balance. While expert input from various agencies will always be required for intelligent decision-making, there is no reason that the United States should lead the world in the number of agencies that share responsibility for export control decisions and is alone in having no central agency with decision-making authority.

2. *Does the current system adequately protect the national security concerns for which it was designed? If not, in what respects does it fail to address these concerns?*

The system has proved valuable in protecting the "force multiplier" advantage that technology gave us in relation to strategic warfare with the Warsaw Pact countries. Our current major national security concerns now are quite different. Our interests seem most threatened by the increasing number of countries (and non-governmental entities) that are acquiring weapons of mass destruction and the means to deliver them. The current system fails to protect us adequately against this proliferation of war making capability. But, perhaps we are asking too much of an export control system. The problem of proliferation cannot be solved by export controls alone even with broad effective cooperation among major supplier countries. Such controls can make a significant contribution but, without intense diplomatic and other efforts, export controls are bound to fail.

3. *Does the current system adequately protect U.S. economic interests? If not, in what respects does the system fail to address these concerns?*

No. Our current system actually impairs U.S. economic interests without much consideration of them. The system does not require any accounting for that side of the equation. When the national benefits justify the costs, export controls are acceptable. Otherwise, we cannot afford the economic impairment. Please note that this is a criticism of the system and not necessarily the people running it. There is no doubt that, spurred in large part by pressure from industry, the administrators do consider economic factors in making policy and licensing decisions. However, there is little requirement that they do so nor any methodology required by our current system.

In addition to considering the economic costs of controls imposed for other purposes, many of the CSIS Steering Committee think that it would be a mistake to try to impose new export controls for the purpose of protecting economic interests, although this is a controversial issue. There already is a perception among U.S. allies that the United States uses export controls in part to limit foreign competition.

4. *Is the current system of export controls keeping pace with advances in technology? If not, what are the effects of the failure to keep pace?*

No. The current system does a poor job of anticipating either the need for controls or their effects. Technology advances rapidly. The current two-year cycle of evaluating and then revising controls results in a time lag of more than two years behind technological advances. Obsolete controls are only abolished after they have been proven ineffective. In the interim, the costs of those controls clearly outweigh their benefits. Since this cycle is dynamic, this means the costs of controls outweigh their benefits at least half the time. Technology also diffuses rapidly. Imposition of controls after the technology has diffused to a significant degree internationally is ineffective in stemming its spread to controlled destinations.

Earlier legislative efforts to require indexing of controls in anticipation of advances in technology are fine in principle, but administrative officials have rejected implementing such automatic requirements to change controls. Yet, no formal method for evaluating what changes should be made to keep pace with technology has been adopted in place of indexing. Rather than simply accepting or rejecting an automatic indexing and sunset of export controls, may I suggest at least requiring the use of an indexing methodology as one yardstick for a formal ongoing effectiveness evaluative process.

Failing to keep pace with advances in technology makes the controls less effective in achieving their intended purpose, impairs the competitiveness of U.S. industry, undermines the cooperation of the controlled industry, and reduces the credibility of controls among our international partners. We need to be forward looking and anticipate announced changes in technology just to keep pace, rather than continuing simply to be reactive, lagging over two years behind, and maintaining controls whose costs outweigh their benefits at least half the time.

****

In conclusion, an export control system can still serve very important national objectives. However, we can no longer afford the costs of ineffective controls. This implies, among other things much tighter multilateral coordination in the application and enforcement of controls. We must take stronger measures to ensure that the benefits we realize from applying export controls outweigh their national costs. Finally, the bureaucratic structure of our control system needs an overhaul aimed at making the process faster, more predictable, transparent, and accountable.

C:\SHARED\MARILYNJ\BHF\CSISTEST.2

SUMMARY LIST OF EXPORT CONTROL AGENCIES, COORDINATING GROUPS, AND MULTILATERAL CONTROL REGIMES

U.S. Agencies Directly Responsible for Administering Export Control and Licensing Regimes

A. Three Principal Agencies

Bureau of Export Administration, U.S. Department of Commerce (Export Administration Act and Regulations)

Office of Defense Trade Controls, U.S. Department of State (Arms Export Control Act and International Traffic in Arms Regulations)

Office of Foreign Assets Controls, U.S. Department of Treasury (Sanctions and Embargoes)

B. Additional Agencies with Direct Responsibility

Nuclear Regulatory Commission and Department of Energy (Atomic Energy Act, nuclear equipment and materials)

Maritime Administration, Department of Transportation (Merchant Marine Act, U.S. flag vessels)

Environmental Protection Agency (various laws with no central export control authority -- pesticides, ozone depletants, etc.)

Drug Enforcement Agency, Department of Justice (Controlled Substances)

Department of Energy (natural gas and electricity)

Agricultural Marketing Service, Department of Agriculture (tobacco seeds and plants)

Fish and Wildlife Servie, Department of Interior (endangered fish andwildlife, migratory birds, etc.)

Patent and Trademark Office, Department of Commerce

Agencies Reviewing Licenses and Policies on a Referral Basis

Department of Defense (Defense Technology Security Administration, Office of Proliferation Controls and Countermeasures, National Security Agency, Service Branches)

Department of State (Office of East-West Trade and Foreign Policy Controls, Office of Weapons Proliferation Policy, Office of Export and Import Control - Nuclear Energy and Energy Technology Affairs)

Department of Energy

Arms Control and Disarmament Agency

NASA

National Security Council

Interagency Policy and Dispute Resolution Committees/Groups

A. Policy Coordination (NSC Coordinated)

Interagency Workng Group (formerly Policy Coordinating Committee) on Technology Transfer

Interagency Workng Group (formerly Policy Coordinating Committee) on Nonproliferation

Missile Technology Advisory Group

B. Dispute Resolution -- First Level

Operating Committee, Chaired by Commerce (Dual-Use)

Sub-Group on Nuclear Export Coordination, Chaired by State

SHIELD, Chaired by State (CBW)

C. Dispute Resolution -- Second Level

Advisory Committee on Export Policy

D. Dispute Resolution -- Third Level

Export Administration Review Board

E. Dispute Resolution -- Highest Level

President of the United States

Multilateral Export Control Regimes

Consultative Group Coordinating Committee (COCOM)

COCOM Forum

Nuclear Suppliers Group (with International Atomic Energy Agency)

Australia Group (Chemical and Biological Weapons, with U.N. Convention on Chemical and Biological Weapons)

Missile Technology Control Regime (MTCR)

Convention on Conventional Weapons

Supercomputer Regime (U.S. and Japan)

CSIS

Center for Strategic & International Studies
Washington, DC

President
*David M. Abshire

Board of Trustees
Chairman
Anne Armstrong

Trustees
Dwayne O. Andreas
Donald R. Beall
David R. Gergen
Maurice R. Greenberg
Ray L. Hunt
Amos A. Jordan
Joshua Lederberg
Leonard H. Marks
Ann D. McLaughlin
Homer A. Neal
Diane J. Plotts
William A. Schreyer
Frank A. Shrontz
John R. Stevenson
*The Duke of Westminster
R. James Woolsey
Stanley R. Zax

Advisory Board
Chairman
*Paul A. Volcker

Research Council
Co-chairmen
Walter Laqueur
*Murray Weidenbaum
Stanton Burnett

CSIS Counselors
*William E. Brock
Harold Brown
*Zbigniew Brzezinski
William J. Crowe, Jr.
Henry A. Kissinger
James R. Schlesinger

*Also Trustees

December 15, 1992

President-Elect Bill Clinton
c/o Presidential Transition Team
1120 Vermont Avenue, N.W.
12th Floor
Washington, DC 20270

Dear Mr. President-Elect:

The Center for Strategic and International Studies project, *Export Controls in a Changing World*, has been addressing the role of export controls in achieving critical national objectives, including stemming the proliferation of weapons of mass destruction. Current unilateral and uncoordinated multilateral controls are ineffective and undermine the health of vital U.S. industries.

Enclosed is a CSIS paper "Export Controls and Nonproliferation" which sets forth an action agenda to make these controls more effective and remedy their detrimental effects on our industrial competitiveness.

This project grew out of our *Strengthening of America* project, co-chaired by Senators Nunn and Domenici. That project identified export controls as one of the important regulatory impediments to U.S. competitiveness.

We have assembled an extraordinary group of approximately 50 experts and analysts in the Steering Committee for the export control project (a list of participants is appended). This committee is co-chaired by Mr. Boyd McKelvain, a GE corporate official, and Ambassador Richard Burt. It includes present and past executive level government officials, industry representatives and experienced and thoughtful academics.

A hallmark of CSIS studies is their bipartisan nature. That is true for the present study.

The paper we offer has been drafted by a designated sub-group of the Steering Committee. They have made an earnest effort to develop this paper as an effective instrument whose recommendations can be implemented through the White House Economic Policy Council, and the several key departments -- Defense, Commerce, State and Energy. The full Steering Committee has not had a chance to comment on the paper.

The members of the drafting group offer individually or as a group to make themselves available for consultation with your transition team.

Sincerely,

Irwin M. Pikus
Director
Science & Technology Program

EXPORT CONTROLS AND NONPROLIFERATION

* * *

A transition paper prepared by
CSIS' *Export Controls in a Changing World* Project

December 15, 1992

The Science & Technology Program

EXPORT CONTROLS AND NONPROLIFERATION[*]

ISSUE: How can the export control system be improved to slow the spread of nuclear, chemical, and biological weapons and missile delivery systems and also to stop needlessly damaging the U.S. economy?

PROBLEM

Present unilateral and uncoordinated multilateral controls are ineffective yet they disadvantage U.S. products in world markets and give away U.S. political and economic leverage. Billions in sales and sales opportunities are lost, relationships with customers are damaged and U.S. jobs, income, and ultimately R&D investment are lost.

a. Controlling proliferation through export restriction is considerably more difficult than was restricting strategic advanced technology to the Soviet Bloc.

- Goods and technology sufficient for many proliferation activities are widely available and cannot be controlled effectively.
- Multilateral regimes have agreed on several control lists of proliferation-related items but they do not agree on how, and against which countries, control lists should be applied.

b. The United States imposes unilateral controls; utilizes lower thresholds for denial of multilaterally controlled goods; and processes cases less efficiently than do other members of the multilateral regimes.

- Even allies refuse to cooperate on U.S. unilaterally controlled items.
- Efforts to establish disciplined enforcement of multilateral controls have been largely unsuccessful.

c. Multiple U.S. regulatory regimes are inconsistent and overlapping in jurisdiction.

- Commerce, State, Defense, Energy, Treasury and several other agencies and bureaus in these agencies have overlapping, often competing, regulations and licensing jurisdiction, and they function without effective coordination.

d. Statutory guidance for controlling civil exports is missing because the Export Administration Act expired in 1990. Renewal legislation requires immediate attention by the incoming Administration.

---

[*] This paper does not necessarily represent the opinions of all of the steering committee members of CSIS' *Export Controls in a Changing World* project.

EXPORT CONTROLS AND NONPROLIFERATION (continued)

IMMEDIATE ACTION

1) The U.S. should convene a ministerial level meeting of significant supplier countries to consolidate and harmonize export control policies and procedures.

2) Bureaucratic gridlock in the export control system should be broken immediately by having the President direct that an interagency task force, under the direction of the Economic Security Council:

    - publish a single, harmonized list of controlled goods and technologies;

    - begin developing a single set of integrated control regulations; and

    - streamline the interagency civil case review processes into a single process with the Commerce Operating Committee as the primary forum.

3) Commerce should be charged with the responsibility to assess the effectiveness of nonproliferation controls based on standards it establishes for controllability and impact on restraining proliferation.

    - Ineffective controls should be removed unless prompt action is taken with the reasonable expectation of making the controls effective.

    - The catch-all Enhanced Proliferation Control Initiative restrictions, which prevent the export of *anything* to destinations of proliferation concern, should be focused on items that make direct and material contributions to proliferation.

4) A new Export Administration Act should be proposed by the Administration including these improvements:

    - A clear delineation of jurisdictions and responsibilities of the various departments and agencies;

    - A requirement for multilateral coordination of nonproliferation controls as well as adherence to standards of effectiveness; and

    - Provisions for administrative and judicial review that are consistent with the Administrative Procedures Act.

BACKGROUND DISCUSSION[**]

The negative economic impact of Cold War export controls was minimized because a multilateral consensus on the threat provided an incentive for cooperation among the principal suppliers, the Western allies.

As proliferation has become a threat, the United States has attempted to apply similar control methodologies to an inherently different problem. Commodities sufficient for many proliferation activities are widely available. Even where multilateral regimes have reached agreement on control lists, there is a lack of consensus on target destinations and on criteria for denial.

Moreover, U.S. businesses face an expanding group of opaque and inefficient bureaucracies in the licensing process. Foreign competitors have easier market access because their governments control exports less stringently and process cases more efficiently.

The United States has imposed "end-use" controls to provide political insurance against any U.S.-origin good being found in a proliferation facility, regardless of its relevance to weapons. While U.S. exporters try not to contribute to proliferation, failure of the regulations to provide a standard of materiality means that exporters of products with no conceivable relationship to proliferation must undertake the costly burden of internal procedures for customer and transaction screening.

U.S. unilateral controls often cost the United States more than the target country. Other suppliers simply move in to displace the U.S. suppliers, which in turn lose their reputations for reliability in world markets. Over time, this provides a motivation for foreign manufacturers to design out U.S. components in products for the global marketplace. Moreover, the U.S. government's leverage afforded by the ability to cut off essential parts and service from a violating country's infrastructure, such as airlines, is foreclosed by denying U.S. participation in benign product markets.

In conclusion, the use of export controls to combat proliferation should require evidence that they will have an impact commensurate with their cost.

[**] This paper specifically addresses urgent problems with nonproliferation controls. However, its recommendations are generally applicable to all export controls, including important restrictions on the transfer of arms and other advanced dual-use technologies.

Export Controls and Nonproliferation
CSIS Press Briefing
Jan 5, 1993

Boyd J.McKelvain

WHY THE SUBJECT OF EXPORT CONTROLS AND NONPROLIFERATION IS IMPORTANT TO THE US ECONOMY AS WELL AS NATIONAL SECURITY

Most people don't realize that the ASEAN economies plus Korea, Taiwan and China provide a market for U. S. exports of $60 billion. That's more than our exports to Japan and more that half of our exports to the EC.

Even more important from a marketing point of view is that these dynamic economies are growing at a rate of 7-to-10% a year while the EC and Japan are stuck at a rate of 1-to-2%. Indeed, exports to Japan in '91 actually declined by 2% while our exports to the ASEAN grew by 10% over 1990.

With slow growth in the United States, the EC, Japan and Canada, where in the World would you guess the competition is most fierce among international companies?

Now, you already know how important exports are to our economy and how tough the international competition is. But I think it's important to have in mind this backdrop of the shape of the global economic battlefield to understand why the United States is faced with a dilemma regarding how to stop proliferation: Specifically, how can we use export controls in the effort to stop the proliferation of weapons of mass destruction without suffering defeat in our efforts to achieve economic security?

These dynamic Asian economies, along with the Middle East -- which also is an important and fast growing market for U. S. exports -- are the regions of proliferation concern targeted by the United States and its Allies. Allies, which, by-the-way, also are those same slow growing economies that are soaking up less of our exports while they are fighting tooth and nail with us for those precious Asian and Middle East markets. The point I'm trying to establish is that, more than ever -- more even than was true of East-West COCOM controls on strategic technologies -- real, honest-to-God multilateral cooperation is crucial to effective export controls.

It's important to remember that a multilateral export control regime is nothing more that an international cartel. It's not worth a damn if the self discipline of the suppliers is not reliable. Or how good is a cartel of 15 or 20 suppliers where only one really denies exports.

THE PROBLEM

Historically, the effective discipline of the Cold War, COCOM export control system minimized its negative impact on the members. Now as proliferation has become a threat, we're attempting to apply similar methodologies to an inherently different problem. Commodities sufficient for many proliferation activities are widely available. And target countries are critical trading partners.

We've got three or four different multilateral regimes, and the members don't agree on target destinations, nor on denial criteria. For example, most of the major supplier members approve virtually all control list items to Iran, while the U. S. approves none of its exporters' applications.

And we're subjecting ourselves to a horrendous experience of bureaucratic gridlock, partly because of the failure of the Administration and the Congress for over two years to renew the Export Administration Act.

Without the framework of the basic legal infrastructure for our export control system, we have a proliferation of laws and implementing agencies imposing ad hoc controls with abandon.

Just to illustrate what I mean by bureaucratic gridlock: the 1991 National Defense Authorization Act authorizes the State Department to identify entities involved in missile proliferation activity and then requires denial of export licenses for controlled items to such destinations. Sounds reasonable if you don't have it in context with existing controls. At the same time, the Commerce Department's Enhanced Proliferation Control Initiative

Regulations require exporters to apply for an export license if they know that the end use is a proliferation activity.

That applies to everything... including bedpans and medical equipment.

Now let's see how that works in practice. The State Department identifies for the NDAA missile sanctions a major government agency of India, the Indian Space Research Organization, or ISRO. Then an exporter gets an order for refrigerators for the ISRO cafeterias . He must apply for a license or risk violation of the EPCI controls.

Now Commerce only denies such applications under EPCI if there is a significant probability that the items will be diverted to the missile activity and would contribute materially to that activity. Nevertheless, Commerce refers the application to State. Now, State claims its hands are tied. The NDAA requires that no export license be approved to an entity sanctioned for missile proliferation.

Presently, there are hundreds of export cases caught in this gridlock. Many have been there for months and nobody is willing to break them out. I understand two small firms are on the brink of bankruptcy because ISRO is their major customer for unlisted, general license items.

And the story repeats itself when you consider the entire country of Iran. The new NDAA requires no approval of validated licenses to Iran. The U. S. has a long list of unilateral controls on things our Allies refuse to cooperate on. These unilateral controls result in denial of nothing to Iran, but cost thousands of U. S. jobs and $Billions in lost income.

From the point of view of effectiveness, we haven't even been able to get our closest allies to deny all Munitions items to countries like Iran, much less these benign, generally available exports.

So at the end of the day, everybody wants a part of the nonproliferation grandstand, but nobody has yet taken responsibility to figure out the real role of export control policy in stopping proliferation.

We believe export controls are not the appropriate weapon of choice in this battle. Indeed we think the U. S. is giving up economic and political leverage with the proliferation-prone countries.

By opting not to participate in helping them grow their economic infrastructures, we're turning over our influence to countries without the intelligence systems and the will to use their muscle when proliferation activity needs to be stopped.

IMMEDIATE ACTION

We're recommending that the new Administration act immediately to convene a ministerial level meeting of major suppliers to consolidate and harmonize policies and procedures.

Secondly we call for stopping the gridlock by having the President direct an interagency task force, under the Economic Security Council, to do three things:

> Publish a single harmonized control list;

Begin developing integrated regulations; and

Streamline the civil case review process with Commerce as the primary forum.

We also want to see the new Administration charge Commerce with responsibility to assess effectiveness of controls based on published standards of effectiveness

And finally, we recommend that the new Administration should move ahead to propose a new Export Administration Act that matches today's global environment

Delineate jurisdictions and responsibilities of the agencies;

Require mulitlateral coordination of nonproliferation controls and adherence to standards of effectiveness; and

Provide for judicial review in a manner consistent with the Administrative Procedures Act.

FOREIGN AVAILABILITY REVIEW OF COMPUTERS

EXECUTIVE SUMMARY

INTRODUCTION

(U) This study reviews the foreign availability of computers that are export-controlled for national security purposes. The review focuses on non-COCOM computers (ranging from desktop workstations to supercomputers) with Composite Theoretical Performance (CTP) greater than the current G-DEST level of 12.5 Million Theoretical Operations Per Second (MTOPS).[1]

(U) The study was undertaken to provide information about the foreign availability of computers for U.S. negotiators to use at the COCOM discussions of computer export control thresholds, held during September and October 1992. The portion of this study that examines non-COCOM supercomputers will be expanded into a more comprehensive paper to support U.S. negotiators in separate talks on supercomputers in October 1992.

(U) For the sake of simplicity, workstations are defined herein as general-purpose computers with CTP values above 12.5 MTOPS, but below the supercomputer level. Workstations include high-end personal computers and other desktop/deskside machines with single or multiple CISC (complex instruction set computer) or RISC (reduced instruction set computer) microprocessors. Current CTP limits for workstation exports are summarized in Table III-2 at the end of this section.

(U) Machines currently classified as "supercomputers" are those machines with CTP values greater than 195 MTOPS. Supercomputers include vector processor and massively parallel processor machines.

(U) While this study reviews the foreign availability of computers, some consideration is also given to leading microprocessors (or MPUs) available on the merchant market. MPUs are the heart of a modern computer and directly determine its strategic utility for export control purposes.

METHODOLOGY

(U) This study reviews non-COCOM computers in terms of the customary four criteria of foreign availability: 1) non-U.S. origin; 2) comparable quality; 3) sufficient quantity; and 4) availability-in-fact.

(U) **Non-U.S. origin** means that an item is not the direct product of U.S. technology, and that the item does not incorporate more than 25% (by value) of export-controlled U.S. parts and components. **Comparable quality** refers to comparable performance, technical approach, and reliability. **Sufficient quantity** refers to a quantity large enough so that export controls for that item are rendered ineffective. **Availability-in-fact** means that the item is actually available without export licensing restrictions comparable to our own.

(U) Sources of information used for this study include commercial and technical publications from the public domain, technical specifications and other information supplied by U.S. and foreign manufacturers, online data base searches, intelligence community reports, and information solicited from U.S. embassies. Trade and market data was derived largely from industry forecasts such as those made by Dataquest and IDC, from consultations with members of BXA's Computer Systems Technical Advisory Committee (CSTAC), and from the staff of the Office of Computers and Business Equipment (OCBE) of the International Trade Administration.

CONCLUSIONS

Workstations

(U) Workstations above export control levels are produced in Brazil, the People's Republic of China (PRC), India, South Korea, Singapore, and Taiwan. Non-U.S. origin workstations based on leading microprocessors (both CISC and RISC) are available free of COCOM-comparable export controls from the countries listed above. Such workstations are available in quantities sufficient to render current COCOM export controls ineffective.

(U) The number of sources of controlled-level workstations and the number of different types of workstations available from non-COCOM countries is increasing. Table III-5 at the end of this executive summary lists sources and performance levels for non-COCOM and comparable U.S. workstations.

(U) The lack of effective export controls in the six non-COCOM nations listed above clearly indicates that the workstations they produce are available-in-fact. Although South Korea, Taiwan, and Singapore have undertaken measures to establish export controls, they have yet to be fully implemented. India and Brazil have not yet implemented COCOM-comparable export control policies and practices. The PRC does not have an export control system for COCOM-controlled products.

(U) The gap between the performance of workstations controlled by COCOM and that of workstations used in industry is growing. The current COCOM control limit is 12.5 MTOPS. CTP values for low-end workstations commonly used in industry both here and abroad now range from about 12.5 MTOPS to about 30 MTOPS. Workstations with CTP values up to and above the current supercomputer limit of 195 MTOPS are also in standard use by industry worldwide. As the performance gap widens between COCOM-controlled workstations and standard workstations used by industry, U.S. makers will be at a competitive disadvantage vis-a-vis non-COCOM firms, who can increasingly offer workstations at all performance levels without export restrictions.

(U) Multi-processing workstations with high CTP values, though produced in small quantities, are available to proscribed destinations from non-COCOM sources. Multi-processing CISC and RISC systems are unlikely to become high volume products in the near future because the global market for them is still small in unit terms. Because multi-processing workstations have become easier and cheaper to make, however, the number of potential sources is growing. The proliferation of know-how on multi-processing, coupled with availability of cheaper and faster microprocessors, means that the CTP levels of multi-processor workstations from non-COCOM sources will continue to increase. This availability, even in small quantities, provides proscribed nations with an alternative source for workstations with high CTP levels in cases where COCOM approval is denied or delayed.

(U) Workstations are marketed through such diverse methods that truly effective export controls may be illusory. Workstations based on 80486 MPUs are truly mass-market items, sold through hundreds of channels worldwide such as retail stores, wholesale distributors, value-added resellers, mail order, kits, end-user upgrades, etc. RISC-based workstations are starting to use the same distribution channels, with some (e.g., CompuAdd's SPARCStation 2 clone) already available by mail order.

(U) Widespread foreign availability of workstations with CTP up to 24.8 MTOPS supports the current U.S. proposal to raise the COCOM limit to 25 MTOPS. Non-COCOM manufacturers can now produce very large numbers of workstations based on the Intel 80486 MPU with CTP values up to 24.8 MTOPS. It is estimated that more than a quarter-million such workstations and/or motherboards could be produced by non-COCOM Asian firms alone in one year. Such machines are commodity items, representing the low end of workstation performance.

(U) Workstations with CTP values from 25 to 90 MTOPS are available in small quantities from non-COCOM countries. Manufacturers in non-COCOM nations now offer both CISC and RISC workstations with CTP ratings in the range of 25 to 90 MTOPS, without export restrictions. These workstations include multi-processor systems based on the 80486 MPU, and single- and multi-processor computers based on various RISC microprocessors. While such machines are produced in relatively small numbers, the availability of even a few machines diminishes the effectiveness of current export restrictions. Larger quantities of such computers could be produced in non-COCOM countries if demand warranted it.

(U) Workstations with dramatically higher performance are likely to become available from non-COCOM producers over the next 12 to 24 months. Powerful new microprocessors (such as Intel's P5, DEC's Alpha, TI's SuperSPARC, and others) are now (or soon will be) available on the merchant market in large quantities. The first generation of single-processor workstations based on these chips will have CTP values ranging from about 50 MTOPS to 194 MTOPS; multi-processor systems will have CTP values that are multiples of these figures. Non-COCOM firms have proven their capability to design and manufacture computers comparable to those from COCOM makers within months of the availability of a new microprocessor. Non-COCOM firms are already working on single- and multi-processor systems based on the P5 and SuperSPARC. New COCOM CTP limits should anticipate non-COCOM availability of such systems.

(U) Impending foreign availability of workstations with performance above the current "supercomputer" threshold presents a serious challenge for U.S. manufacturers. U.S. firms already offer workstations with "supercomputer" performance, based on the current generation of open-architecture RISC MPUs. Non-COCOM companies will begin to produce their own machines, based on the same microprocessors, over the next 12 to 24 months. If such workstations remain subject to supercomputer export controls, U.S. firms are likely to lose their critical first-to-market lead over non-COCOM manufacturers. The profit margin on a $250,000 workstation with supercomputer performance will not support compliance with regulations that require round-the-clock supervision of computer security in countries such as Brazil and Israel. Nor will foreign customers be willingly burdened with such requirements. This situation presents a real threat to the competitiveness of U.S. firms such as DEC and Sun, which depend on exports for 50 percent or more of their revenue.

(U) U.S. manufacturers may lose technological leadership in workstations, if current export control levels are not adjusted to reflect current market realities. U.S. manufacturers lead in workstation technology and are very competitive in time-to-market for workstation products. If current export controls are not modified, or are adjusted to a level that does not reflect the realities of the U.S. industry's competitive position, then industry is likely to increase their offshore licensing of workstation technology.

(U) While commercial licensing of advanced computer technology provides near-term benefits to U.S. firms, it will accelerate foreign development of leading-edge workstations, narrowing the current estimated U.S. lead of two years. In addition, commercial licensing will result in the proliferation of workstation clone makers who will take market share and revenue from U.S. firms.

(U) Reduced revenues available for U.S. firms to finance development of new computer systems forces more of the the computer manufacturing base offshore and U.S. firms may lose their technological primacy. This will have a cumulative negative impact on civilian industry and the defense industrial base.

Supercomputers

(U) The only producers of supercomputers in the non-COCOM world are Russia and Ukraine, which have several hundred high-performance parallel processors, and India, which has recently established an indigenous industry centered around the PARAM supercomputer.

(U) Russia and Ukraine do not have an export control system for COCOM-controlled products, while India has not yet implemented COCOM-comparable export control policies and practices. Therefore, controlled-level supercomputers are currently available-in-fact from these three countries.

(U) The Russian, Ukrainian, and Indian massively parallel processors require very specialized software tools and programming language to be effective. It is not clear how far along these countries are in the development of such software.

(U) Although the Indian supercomputer industry has received foreign orders for the PARAM, it is unclear how software-functional this machine will prove to be when compared to competing U.S.-made Cray Research machines.

(U) Because of the PARAM supercomputer and some university demonstration projects in non-COCOM countries, it is no surprise that U.S. industry seeks an increase in the supercomputer performance definition and a decrease in the stringent on-site safeguards mandated by the supercomputer control regime.

(U) U.S. industry contends that the availability of high-performance microprocessors allows non-COCOM computer engineers to construct comparable-quality massively-parallel supercomputers. This argument is flawed because the existence of hardware alone does not imply comparable quality. It could take years before the electronic reliability and software resources of such a machine become equivalent to those of COCOM machines that have gone through years of expensive development.

(U) The quality of a computer is not dependent solely on hardware. Quality is also a function of software such as operating systems and language compilers. The operating system allows the machine to respond to various commands, while the compiler translates programming language into statements that can be executed by the machine's circuits. Operating systems and compilers for workstations are openly published worldwide and exportable under general license GTDA. Operating systems and compilers for supercomputers are more complex than those for workstations, and are generally proprietary, reflecting the limited market for supercomputers. The functionality of operating systems and compilers for use on non-COCOM produced supercomputers has not been documented.

(U) In particular, it is to be noted that:

- The functionality, reliability, and extensiveness of software for the Russian, Ukrainian, and Indian machines has not been widely demonstrated.

- The supercomputers of first choice by non-COCOM researchers are still those made by U.S. and Japanese firms, viz, Cray Research, Alliant, Control Data, NEC, and Fujitsu, because these machines have a long history of being reliable and software-functional.

(U) High-end workstations with CTP ratings near or above the current supercomputer threshold of 195 MTOPS are likely to be available from non-COCOM producers within 12 to 24 months, and such machines may take some market share from low-end U.S. supercomputers.

(U) Some upward revision of the CTP value used for the definition of "supercomputer" in the supercomputer control regime must be considered because failure to do this will adversely impact the sale of U.S.-made high-end workstations (e.g., the Sun SparcStation 8810 model 54 rated at 206 MTOPS, and workstations based on the Alpha MPU from Digital Equipment Corporation) and low-end "supercomputers" (e.g., some machines in the Cray Research XMP series). Current supercomputer controls will have little effect in preventing availability of similar machines from non-COCOM suppliers.

TABLE III-2: NATIONAL SECURITY EXPORT CONTROLS ON WORKSTATIONS

CONTROL LEVEL	DESTINATIONS	MTOPS LIMIT	COMMENT
G-DEST	All	12.5	ECCN 4A03A.c.
AEN	Q,Y,PRC	20.0	ECCN 4A03A.c, Advisory Note 1. GFW-eligible except §778, Supp. 4.
FC	Q,Y,PRC	23.0	ECCN 4A03A.c, Advisory Note 3. Not GFW-eligible.
FC	W	41.0	ECCN 4A03A. Country Group W policy
GE	Q,Y	23.0	ECCN 4A03A.

(U) Table III-5 below lists a sample of workstations available from non-COCOM and U.S. companies. The workstations listed have CTP values above the current COCOM control level of 12.5 MTOPS, and many are in excess of the General Exception limit of 23 MTOPS. Computers based on all of the leading microprocessor families are made in the United States, and a few U.S.-made workstations are included for comparison. The table is not a comprehensive list of controlled-level non-COCOM and U.S. workstations; such a list is beyond the scope of this study and would be rapidly outdated in any case.

TABLE III-6: WORKSTATION SOURCES AND PERFORMANCE

COMPANY	MODEL	MPU (QUANTITY)	CLOCK (MHz)	CTP (MTOPS)
BRAZIL				
Alfa Digital	AX-486/50	80486DX2	50	18.6
Lince	LC 32-486	80486DX	50	18.6
Microtec	MF 486	80486DX2	50	18.6
CHINA				
CCSEC	Huasheng 4075	SPARC	40	21.7
HONG KONG				
Genon	Model 3486	80486DX2	66	24.8
Informtech	IT486SQ	80486DX	50	18.6
Ocean Office	Hippo-II	80486DX	50	18.6
Oricom Data	486/Vtek	80486DX2	66	24.8
Peaktron	PA486-SMT-50	80486DX	50	18.6
Porro	i860 WS	i860	40	61.7
Triple D	TD-80H	80486DX2	66	24.8
INDIA				
DCM	Superstation II	SPARC	40	21.7
Godrej & Boyce	G8860A Symphony	i860	33	51.4
Godrej & Boyce	G8860A Symphony	i860 (2)	33	90.0
HCL	Meteor III	80486DX2	50	18.6
HCL	Magnum	R3000	25	16.7
HCL	MultiRISC	R3000 (4)	25	57.3
Pertech	Hallmark MP	80486DX (6)	33	65.2
Wipro	Landmark	80486DX2	50	18.6
Wipro	Landmark 4860	i860 + 80486DX	i860: 40 486: 33	61.7
SOUTH KOREA				

TABLE III-5: WORKSTATION SOURCES AND PERFORMANCE				
COMPANY	MODEL	MPU (QUANTITY)	CLOCK (MHz)	CTP (MTOPS)
Goldstar	GWS-40	SPARC	40	21.7
Hyundai	HWS-S200K	SPARC	40	21.7
Modern Instrument	MI486-50	80486DX	50	18.6
Samsung	SysteMaster 486D2/50E	80486DX2	50	18.6
Samsung	SysteMaster 486/50E	80486DX	50	18.6
Samsung	SysteMaster 486D2/66E	80486DX2	66	24.8
Samsung	MagicStation I & II	i860	40	61.7
Suk Jung	SJ-486DX/50	80486DX	50	18.6
Trigem	SDT-400	SPARC	40	21.7
SINGAPORE				
GES	Datamini MULTIflex	80486DX2	50	18.6
TAIWAN				
Acer[▲]	AcerPower 500	80486DX	50	18.6
Acer[▲]	AcerFrame 300	80486DX2	66	24.8
Acer[▲]	AcerFrame 1000	80486DX (2)	50	34.4
Acer[▲]	AcerFrame 3000 MP	80486DX (4)	50	66.1
Arche	APG-486	80486DX	50	18.6
Arche	M/PAX	80486DX (6)	33	65.2
Asustek	EISA-486A	80486DX	50	18.6
Autocomputer	AUVA 435/50	80486DX	50	18.6
CAF	C426-50	80486DX	50	18.6
Chaintech	CT400	80486DX	50	18.6
Chaintech	450SC	80486DX2	66	24.8
Copam	PC486/C50	80486DX2	50	18.6
Copam	PC486/C66	80486DX2	66	24.8
Datatech	FEAT-5031	80486DX	50	18.6

TABLE III-5: WORKSTATION SOURCES AND PERFORMANCE

COMPANY	MODEL	MPU (QUANTITY)	CLOCK (MHz)	CTP (MTOPS)
Datatech	DTK Station VME	SPARC	33	18.1
Datatech	DTK Station 2	SPARC	40	21.7
Elitegroup	ECS VS-2000	SPARC	40	21.7
First International	LEO 486-50SE	80486DX	50	18.6
Interland	EISA-486-50	80486DX	50	18.6
Jet Way	Jet-486DX 50	80486DX	50	18.6
Mitac	4060T/M	80486DX2	66	24.8
Mitac	4280G/MP	80486DX (4)	33	44.1
Ocean Office	Kaiyo SL-300	80486DX	50	18.6
Pacific Technology	BCI-WB	80486DX	50	18.6
Plantron	PT-486DX-50	80486DX	50	18.6
Quansan	486Station	80486DX	50	18.6
Tatung	TCS-9300T	80486DX	50	18.6
Tatung	Mariner 4i	SPARC	25	16.7
Tatung	COMPstation 40	SPARC	40	21.7
Tatung	COMPstation 99▼	SPARC (2)	40	40.8
Tatung	Super COMPserver▼	SuperSPARC (4)	45	206.4
Technica House	MF-4050	80486DX	50	18.6
Twinhead	TWINstation	SPARC (2)	40	40.8
UNITED STATES				
ALR	PowerPro	80486DX	50	18.6
Compaq	SystemPro 486	80486DX (2)	33	23.0
CompuAdd	SS2	SPARC	40	21.7
Data General	AViiON AV-8000	88100 (4)	25	54.3
DEC	433MP	80486DX (6)	33	65.2
DEC	DECstation 5000/240	R3000	40	26.7
H-P	Vectra 486u	80486DX2	66	24.8

TABLE III-5: WORKSTATION SOURCES AND PERFORMANCE				
COMPANY	MODEL	MPU (QUANTITY)	CLOCK (MHz)	CTP (MTOPS)
H-P	HP9000 Series 705	PA-RISC	35	36.5
H-P	HP9000 Series 750	PA-RISC	50	68.8
IBM	RISC 6000 Model 730	RS-6000	25	47.9
Silicon Graphics	4D/RPC Iris Indigo	R3000	33	22.2
Silicon Graphics	4D/480	R3000 (8)	40	178.3
Silicon Graphics	4D/CRIM Iris Crimson	R4000	50	79.4
Sun	Model 4/75 SPARC 2	SPARC	40	21.7
Sun	600MP Model 140	SPARC (4)	40	79.2
Sun	SS10 Model 30	SuperSPARC	33	48.0
Sun	SS10 Model 54	SuperSPARC (4)	45	206.4

Source: Compiled by OFA from press sources, data supplied by manufacturers, and BXA/OTPA.
♥ = Model should be available within the next six months.
♠ = Acer maintains that its workstations are not available in fact to proscribed destinations.

ENDNOTES - EXECUTIVE SUMMARY

1. COCOM countries do not require a license for the export to proscribed destinations of computers with performance less than or equal to 12.5 MTOPS. Such exports from the U.S. can be made under general license G-DEST, and 12.5 MTOPS is generally referred to as the G-DEST level in this paper, although certain unilateral U.S. controls modify G-DEST eligibility (e.g., computers at 6 MTOPS and above are controlled to Iran and Syria for foreign policy reasons).

Computer applications over 12.5 MTOPS (Excludes 12.5)

7. Overall total

	#	$
Approved	6,999	$7.2 B
Denied	137	133 M
RWA'd	491	1.2 B
Total	7,627	8.5 B

8. Greater than 12.5 MTOPs (Excludes 12.5)
(Q, W, Y, Z, S, and China)

	#	$
Approved	1,134	319 M
Denied	55	95 M
RWA'd	155	151 M
Total	1,344	565 M

Greater than 12.5 MTOPs (Excludes 12.5)
(C, T, and V)

	#	$
Approved	5,858	6.8 B
Denied	82	38 M
RWA'd	335	1 B
Total	6,275	8 B

9. Total 4A03 Applications

	#	$
Approved	7,914	8.4 B
Denied	148	165 M
RWA'd	669	1.6 B
Total	8,731	10.2 B

10. Total Applications

	#	$
Approved	20,537	17.9 B
Denied	457	914 M
RWA'd	3,045	5 B
Suspended	2	450 K
Revoked	2	41 K
Total	24,047	24 B

All data given are for cases closed out in the time period April 1, 1992 - March 31, 1993.

1. 0 MTOPS

	#	$
Approved	753	1.2 B
Denied	8	25 M
RWA'd	148	360 M
Total	909	1.6 B

2. .1 - 12.5 MTOPS (Inclusive)

	#	$
Approved	162	88 M
Denied	3	7 M
RWA'd	30	14 M
Total	195	109 M

3. 12.51 - 25 MTOPS (Inclusive)

	#	$
Approved	3,243	$1.2 B
Denied	87	15 M
RWA'd	194	60 M
Total	3,524	1.3 B

4. 25.01 - 50 MTOPS (Inclusive)

	#	$
Approved	1,317	839 M
Denied	17	5 M
RWA'd	85	34 M
Total	1,419	878 M

5. 50.01 - 100 MTOPS (Inclusive)

	#	$
Approved	1,418	1.7 B
Denied	23	13 M
RWA'd	107	59 B
Total	1,548	1.8 B

6. over 100 MTOPS (Excludes 100)

	#	$
Approved	1,021	3.5 B
Denied	10	100 M
RWA'd	105	1.1 B
Total	1,136	4.6 B

STATEMENT OF CONGRESSMAN SAM GEJDENSON

CHAIRMAN

SUBCOMMITTEE ON ECONOMIC POLICY, TRADE AND ENVIRONMENT

JUNE 23, 1993

This is the second in our series of hearings on the Export Administration Act. At our first hearing, there was compelling testimony demonstrating that our export controls are outdated, ineffective, and in need of overhaul. There was agreement among the witnesses that the U.S. tries to control a much broader range of equipment and technology than it should and that this damages both our economic interests and our national security interests.

By controlling too much, we make it difficult to properly focus our regulatory efforts on choke point technology, and we make it harder to achieve the multilateral consensus needed for increased discipline in the non-proliferation control regimes.

We are hopeful that today's witnesses will help us to frame the solutions to some of these very difficult problems. They certainly have the qualifications and the expertise to do so. Dr. Roland Schmitt is the President of Rensselaer Polytechnic Institute and chaired the National Academy of Sciences panel on export controls. He is joined by Major General William F. Burns, former Director of the Arms Control and Disarmament Agency and Vice Chairman of the National Academy of Sciences panel on export controls. Also on the first panel is Dr. John Steinbruner, Director of Foreign Policy Studies at Brookings, who served with distinction on the NAS study.

On the second panel we are very fortunate to have Jerry Jasinowski, President of the National Association of Manufacturers. We take Mr. Jasinowski's presence here today as a clear signal of the importance that the business community attaches to this legislation. Mr. Jasinowski will present to the Subcommittee, NAM's draft bill to revise the EAA.

Unless there are any other opening statements, let's proceed to hear from the witnesses.

TESTIMONY

of

Roland W. Schmitt and William F. Burns

before

The Subcommittee on Economic Policy,
Trade and Environment
of the
House Committee on Foreign Affairs

June 23, 1993

Mr. Chairman, we are Dr. Roland W. Schmitt[1] and Maj. General William F. Burns (U.S. Army, retired)[2], and we are honored by the invitation to testify today before the Subcommittee on Economic Policy, Trade and Environment of the House Foreign Affairs Committee on the reauthorization of the Export Administration Act. Together, we served from 1989-1991 as chairman and vice chairman, respectively, of a blue-ribbon panel on "The Future Design and Implementation of National Security Export Controls," which was organized by the National Academies of Sciences and Engineering.

---

[1] Dr. Schmitt will retire at the end of June as President of the Rensselaer Polytechnic Institute. He previously spent 37 years of his career with the General Electric Corporation, from which he retired as Senior Vice President for Science and Technology.

[2] General Burns served as the ninth director of the U.S. Arms Control and Disarmament Agency, after a distinguished military career of almost 34 years. Most recently, he served as special envoy to Russia and other states of the former Soviet Union possessing nuclear weapons, aiding in weapon's dismantlement.

The panel released its report, Finding Common Ground: U.S. Export Controls in a Changed Global Environment, in 1991.

We both have continued to remain involved in critical issues related to the subject of this hearing in the two-year period since the release of the report. As noted, General Burns served during the latter part of the Bush administration as the head of the U.S. Delegation negotiating with the republics of the former Soviet Union on the safe and secure dismantlement of nuclear weapons. Also during this period, Dr. Schmitt has chaired the U.S. delegation for a joint activity between the U.S. National Academy of Sciences and the Russian Academy of Sciences on the problem of controlling dual use technology. Some of the major recommendations resulting from this latter activity are presented in this testimony.

The 1991 Academies' report was produced at the request of Congress under the terms of the Omnibus Trade and Competitiveness Act of 1988. The executive summary for that study, which also contains a list of those who participated on the panel, is attached to this statement, and we ask that it be entered into the record. It is worth noting that the congressional request for the study occurred in 1988, prior to the opening of the Berlin Wall and all of the historic events that followed. Yet, during the course of its work, the panel recognized clearly that the Cold War period was ending and that the U.S. and multilateral export control system would have adapt to new demands and challenges. This fact has only been reinforced by the lessons of the Persian Gulf conflict.

Key Findings of the 1991 Academies' Study

The 1991 Academies' study, Finding Common Ground: U.S. Export Controls in a Changed Global Environment, addressed two fundamental questions: (1) How should U.S. export control policies be organized in the post-Cold War world?, and (2) Are U.S. export control policies formulated in a manner consistent with, and supportive of, the full scope of U.S. interests? The conditions that determined the feasibility and effectiveness of national security export controls since the end of the Second World War have changed dramatically, and the nature of the Western security alliance is now changing as well. The dissolution of the Warsaw Treaty Organization (WTO) and the progressive removal of a forward-based, strategic offensive threat from the former Soviet Union led the panel to conclude that a new paradigm for the application of West-East export controls is now required.

Thus, the panel recommended that the U.S. and the other nations participating in CoCom should change the basis of their technology transfer and trade relationships with the republics of the former Soviet Union and the East European countries from the "denial regime" that has existed for more than 45 years to an "approval regime,"[3] based on multilaterally agreed and verifiable end-use conditions. Indeed, the panel concluded that continued pursuit of a policy of general denial is neither administratively feasible in light of the multiple channels and sources for acquisition, nor politically desirable in the context of the current positive trend in relations with the states of the FSU and the other former WTO countries.

In contrast to the dramatically reduced West-East threat, there are growing concerns about the acquisition by certain countries and political organizations of technologies contributing to the proliferation of nuclear, chemical, biological weapons, missile delivery systems, and advanced conventional weapons. The most important distinction between traditional West-East and so-called **proliferation export controls** is that the United States is not in a position to exercise the same level of influence over the suppliers of proliferation-related technologies. Moreover, to be effective, such control regimes _must_ include participation by (at least the nuclear-capable) republics of the former Soviet Union and the People's Republic of China. Indeed, the panel urged that U.S. policy should acknowledge explicitly the need to control proliferation-related technologies as a national security concern.

---

[3] The notion of an _approval regime_ shifts the basis of export control policy from a presumption of general denial (with limited exceptions), where the burden of proof is on the exporter to demonstrate why a particular item _should_ be exported, to one of presumed approval to export, predicated on the existence of verifiable end-use conditions.

The Academies' panel reached four additional broad areas of agreement with regard to:

(1) U.S. Export Control Policy - The panel concluded that carefully tailored and/or refashioned export controls can be appropriate and viable in support of the following U.S. policy objectives: (a) constraining access by the Soviet military to technology and end products that contribute significantly and directly to the improvement of weapons capabilities, (b) constraining access by certain countries to technology and end products that contribute significantly and directly to the development of advanced weapons systems, (c) constraining access by countries of proliferation concern to nuclear, biological, chemical, and missile delivery technologies and know-how, and (d) imposing multilaterally agreed sanctions for violations of international agreements or norms of behavior.

(2) The CoCom control regime - The panel found that the continued credibility of CoCom now depends on the willingness of its members to recognize and respond to the new political, economic, and military realities by developing a flexible and adaptive strategy. The panel recommended that CoCom should be continued but that its focus should be shifted from a denial regime, based on an embargo of controlled goods and technology, to an approval regime, based on a sharply reduced CoCom

Industrial List and contingent on verifiable end-use conditions approved by CoCom.[4]

(3) Proliferation Control Regimes - The panel found that there are insufficient linkages between the multilateral arrangements established to address nuclear, chemical, and missile technology exports and the present CoCom export control regime. Further, issues pertaining to international arms trade, and trade in high-technology weapons, require more coherent multilateral attention than they now receive. The panel concluded that high-level leadership and policy coordination will be needed from a small number of countries, including at least the United States, the United Kingdom, the former Soviet Union, France, Germany, Japan, and China, combined with a mechanism or set of mechanisms for developing and maintaining coordinated international regimes to which all interested states can be parties. In applying export controls to proliferation problems, care must be taken to make them narrowly targeted and as fully multilateral as possible.

(4) The U.S. Export Control Regime - The panel recommended that the U.S. government should develop a new policy process in which all interests are fully and clearly expressed so that presidential leadership can drive decisions in a balanced and timely fashion. Even today, line agencies with conflicting

---

[4] It should be noted that the panel's report was issued prior to the establishment of the CoCom Cooperation Forum in November 1992. Thus, the panel took no position on the advisability of retaining or modifying CoCom as a vehicle for the integration of a more effective proliferation-related export controls.

missions are sometimes unable to integrate the various national security, economic, and foreign policy issues and give executive authorities a balanced, coherent view of the key issues. As a result, a disproportionate amount of bureaucratic resources are expended in resolving disputes, rather than administering and enforcing the export control system. The resulting confusion has on some occasions caused additional delay and expense for U.S. exporters.

To resolve these difficulties, the panel recommended that clear policy guidance be established by the President in a national security directive; that an interagency policy coordinating process be established to formulate and review proposals and recommendations in full consideration of all relevant national interests; and that all routine administrative activities undertaken within the established policy guidelines be consolidated in a single administrative agency, with clear instructions as to when issues should be referred to the interagency policy coordinating process.

Two years have now elapsed since the publication of the Academies' report. In the case of the former Soviet Union and other WTO countries, matters have evolved generally as the panel anticipated, albeit with some political difficulties in the Russian Federation and Ukraine, in particular, that could potentially derail further efforts to liberalize or even eliminate West-East controls. In the case of proliferation-related controls, many of the lessons learned in the aftermath of Gulf War about the scope and extent of Iraqi efforts to acquire technologies and technical capabilities relevant to the production of weapons of mass destruction (WMD) have only served to underscore the need to shift the policy focus rapidly in this direction. In general, however, we believe that these developments have mostly served to validate the key findings and recommendations of the panel. Moreover, due in part to the political exigencies of the Gulf War period when the report was released, most of the panel's recommendations remain unimplemented.

In the remainder of our testimony, we will in some respects step beyond the 1991 Academies' report. Thus, we wish to make it clear that, in what follows, we are not speaking on behalf of the panel or the National Academies of Sciences and Engineering or the Institute of Medicine.

Export Controls and Current U.S. National Security Concerns

As noted previously, it is now apparent that the array of national security threats facing the United States in the post-Cold War world are substantially different from those which have existed during the past 45 years. At the same time, however, it would be imprudent--and, indeed, inaccurate--to suggest that the old concerns which motivated U.S. national security export controls have disappeared entirely. But the reduction and virtual elimination of the monolithic Soviet threat, which all of the CoCom member countries previously recognized, has brought into question whether sufficient multilateral consensus can be maintained regarding the use of export controls as an instrument to counter WMD proliferation.

It is also undeniable that the center of gravity of the national security threats has shifted. But, unlike the Cold War period, we do not and can not know with certainty who our potential adversary(ies) may be in the future. In all likelihood, they may be from among the Third World countries, and they could well be countries that we presently consider our friends. They probably also will be in possession of--or be attempting to develop or acquire--weapons of mass destruction.

In the West-East context, the United States (and most, if not all, of the CoCom countries) continue to have serious national security concerns about the management and control of militarily sensitive dual use technologies during the transition of the Russian Federation and other FSU states[5] to a stable, democratic societies with a normally-functioning market economies. These concerns focus both on the residual problem of diversion of dual use end products and process technology to military applications, particularly within the Russian Federation and on the possibility that technology, end products, and/or know-how might be made available to countries of proliferation concern. A second major set of concerns relate to the need either to establish or upgrade competent civil authorities with the will and capabilities to enforce the laws, decrees, operating regulations, licensing procedures.

---

[5] Although we give primary emphasis to the problems associated with the establishment of viable export administration in the Russian Federation, we recognize that, with the breakup of the former Soviet Union, the problem potentially exists with respect to all twelve republics. The major concern, however, is with those republics which are the more technologically advanced.

These concerns are particularly deepened by the realization that military research and production centers are under extreme pressure to find foreign financial support to ensure their survival for the near-term future. Given this strong financial incentive to export technology, if not people, and the difficulty that the Russian Federation appears to be having in some circumstances in remaining fully knowledgeable about and controlling the export activities of some of the more decentralized manufacturing enterprises, the United States must pay close attention to the actual practice of export administration in the FSU states.

In addition, the large number of remaining nuclear weapons and missile delivery systems and the large numbers of conventional weapons, many of which could be substantially upgraded through access to Western technology, are of concern. Indeed, the fundamental NATO doctrine of reliance on "technology force multipliers" (i.e., using advanced technology to overcome numerical inequalities) in order to maintain strategic force parity has created an inherent conservatism regarding the complete elimination of controls on sensitive dual use technology to the former Soviet Union. And these conservative tendencies have only been reinforced by the continuing political uncertainties in Moscow and by the failure so far of the Russian Congress of People's Deputies--and the governments of certain other FSU states--to ratify the Start II strategic arms agreement.

The reluctance of the United States to agree to the total elimination of West-East export controls is likely to continue until such time as it is apparent that the economic, political, and social upheavals in the Russian Federation will be resolved peacefully, leaving in place an open society that is integrated with the global market economy. Part of this reluctance is also no doubt an inevitable result of the fact that old ways of reflexive thinking and behavior, born out of forty-five years of Cold War mistrust, take time to change (on both sides). It also takes time to build mutual trust and to bring "normality" to political, economic, and social relationships.

At the same time, concerns about the proliferation of WMDs, missile delivery systems, and advanced conventional weapons have resulted in a substantial upgrading of this other set of problems, relative to the old challenges of the Cold War era, as a priority national security concern. Indeed, a significant symbolic outcome of the Persian Gulf conflict--and the revelations about the extent of the Iraqi acquisition efforts--is that the problem is now increasingly referred to as counter-proliferation rather than non-proliferation, implying that it has become necessary to strive simultaneously both to prevent the additional spread of WMDs and to take appropriate measures with respect to those countries that have already developed or acquired WMD technology.

There are, however, some key differences between the new security threat posed by proliferation-related technologies and the old Cold War concerns. First, much of the technology necessary to build WMDs is already fairly widely diffused, and in some cases it has achieved commodity status (e.g., powerful personal computers). Second, the number of known (and potential) proliferant states is large enough as to make it difficult to maintain the same degree of intelligence monitoring and effective enforcement as was the case during the Cold War. Third, many of the weapons systems that proliferant states seek to acquire are becoming increasingly available through the "global arms bazaar" that exists today. Fourth, many would-be proliferant states are themselves now more technologically-sophisticated (often the result of calling home expatriate citizens with advanced training), and therefore they are able to produce weapons systems based on indigenous design and fabrication. And finally, crude versions of many WMDs and missile delivery systems can be assembled using technologies and end products that are often many generations out of date (and therefore widely available on the secondary market), but nonetheless effective and lethal for the intended purpose.

Changes in the process by which the technology needed for the development of new weapons systems are developed, together with the rapidly growing and wide-spread availability (i.e. commoditization) of many previously-controlled items, such as personal computers and certain types of semi-conductor chips, makes the continued enforcement of comprehensive restrictions on the export of sensitive dual use technology extremely difficult. These new circumstances suggest that future efforts to control sensitive technology will require that an assessment be made of its actual "controllability,"[6] i.e., whether the item in question is widely available and whether access to it actually can be constrained. They also suggest that it will be necessary to identify, through both national means and bilateral consultation, specific "chokepoints" in the process of technology development and deployment--particularly in terms of its military application--which enhance the possibility of control. In addition to identifying effective chokepoints, it may be useful to establish separate measures for the practical marking, tracking and verification of end-uses. Such schemes are now more readily adopted and useful in view of the advances in information base, analysis, and communication technologies.

Problems with the Current U.S. Export Controls

The 1991 Academies' study identified a variety of organizational problems, many of which continue today. Responsibility for the administration of the export control system remains divided among three main agencies of the U.S. Government, and includes a number of others in policy formulation and execution. Thus, the process remains slow and cumbersome. Although improved somewhat by the more active leadership now being provided by the staff of the National Security Council, many of the old difficulties about unclear agency jurisdictions, unharmonized or conflicting control lists, and ineffective decontrol procedures continue.

---

[6] The issue of "controllability" was dealt with extensively in the 1991 Academies' report. See especially Chapter 10, pp. 162-164, and Appendix C, pp. 251-253.

At a more fundamental level, the U.S. export control system fails to take sufficient account of the time scale of technological change and the rate and scope of technology diffusion, particularly in terms of what this does to the controllability of a given item. The result is that list modification takes place at an unrealistically slow pace, thereby damaging the international competitiveness of U.S. industry. This, in turn, raises the long-standing concern about the need to "balance the national interest" -- i.e., to weigh the trade-offs between the imposition of more rigorous controls and the need to do everything possible to promote U.S. exports in a highly competitive global market. This debate has never been fully joined, although the current export control system is probably somewhat less onerous for industry (i.e., in terms of maintaining a "level playing field") now than it was in the past.

Two additional problems with the U.S. export control system warrant attention. One is the long-held U.S. practice of imposing unilateral controls, which as you pointed out in your letter, Mr. Chairman, the Academies' panel said should be eliminated, except in highly limited circumstances. Part of the problem is that the U.S. attempts to use export controls as a means to pursue both multilaterally-agreed upon national security goals and unilateral foreign policy objectives. Moreover, unilateral controls can only work if the controlling nation holds a virtual monopoly on the item being controlled. Given the extent of technology diffusion today, there are very few items where this is the case.

Unilateral controls maintained as a temporary measure may continue to be appropriate as long as there are active efforts underway to bring about multilateral control. Even then, it requires a case-by-case judgment as to whether U.S. unilateral restraint will encourage agreement, rather than encouraging other nations to stall while their exporters take advantage of the U.S. competitive disadvantage. Unilateral controls on a permanent basis should be limited to those cases either where the offending country's behavior is so egregious that the U.S. feels obliged to make a symbolic statement on moral grounds or where the statement of U.S. displeasure has some possibility of actually changing the offending behavior in the short term.

The other problematic dimension of the U.S. export control system has to do with re-export controls and the issue of extraterritorial reach. The United States continues to be the only

CoCom country to impose comprehensive re-export licensing requirements, and there is substantial evidence that it is only U.S.-based or U.S.-owned corporations that comply with these controls. Many of our allies continue to object on principle to the extraterritorial application of such controls, arguing that it is an invasion of their sovereignty. Our prescription on re-export controls is similar to that for unilateral controls: (a) impose them only on a temporary basis, while active efforts are underway to obtain the cooperation--and action--of the government of the re-exporting country, or (b) maintain them on a continuing basis only for those items--and end users--where the re-export would cause serious, continuing harm to U.S. national security (e.g., to prevent the kind of shopping of world markets and clandestine importing through third countries undertaken by Iraq prior to the Gulf War).

Future Export Controls and the Former Soviet Union

The United States and its allies currently face a "Catch 22" situation with respect to the continuation of export controls for the republics of the former Soviet Union. We have made the economic and political transformation of the republics a major foreign policy goal, while at the same time we continue to enforce export controls directed at these countries. But these export controls, originally established during the Cold War as a means to restrain both the military and economic development of the Warsaw Pact countries, may now pose an obstacle to successful market-oriented economic development, defense conversion, and democratization in the

FSU republics which the West seeks. In this respect, U.S. foreign policy and national security concerns appear to be in conflict. Yet, it can be argued persuasively that increased technology transfer between the United States and the FSU states is a means both to safely and efficiently rebuild the economies of Russia and its neighbors, and to generate revenue for American companies, while also promoting the national security of the United States.

At the same time, while the long-term goal of U.S. policy is to bring the FSU states into the CoCom framework[7] as full, equal and economically-developed partners, responsible policymaking in the short-term must seek (a) to prevent dual use products and technology from being diverted to military applications within the FSU, and (b) to ensure that FSU technology, end products, and/or know-how is not made available to countries of proliferation concern through re-export. These concerns directly correlate to the willingness and ability of the FSU states to adopt and implement effective export administration regimes. In all of these countries, except the Russian Federation itself, the establishment of such regimes is a completely new undertaking and entirely new bureaucracies and staffs must be established and trained.

---

[7] That is, to assist the FSU states on a bilateral basis to establish or strengthen effective indigenous export administration procedures and to engage these countries in the broader CoCom Cooperation Forum.

If the United States and the countries of the FSU are to proceed with the dismantling of the remaining West-East export control barriers, it is essential to build new and higher levels of trust. The recent dialogue sponsored jointly by the U.S. National Academy of Sciences (NAS) and the Russian Academy of Sciences (RAS), in which we both participated, produced a number of potentially valuable confidence-building measures directly related to export control. While we recognize that confidence-building can be accomplished in a variety of ways, we believe that the following joint NAS/RAS proposals, which were adopted unanimously, warrant further consideration:

1. The United States and Russia could agree now, even before a closer integration of Russia into a reformed CoCom, to establish a joint standing group that would identify and agree upon categories of "strategically dangerous" technologies, with the objective of promoting a convergence between Russian and Western export control lists. This would also help to ensure that Russian authorities would not permit the transfer of sensitive technology to enterprises either in Russia or in countries of proliferation concern that are on Western restriction lists.
2. Through substantially enhanced intelligence sharing, the two governments should identify and agree upon enterprises or "projects of concern" to which certain technologies should not be internally transferred or exported.
3. The two countries should consider establishing a bilateral laboratory group that would work to identify and agree upon

new technologies that may be necessary to control. Similarly, Russian specialists, in cooperation with scientists and engineers from the United States, should undertake an effort to identify "chokepoints" where the unwanted export and/or internal transfer of technology can be prevented effectively.

4. The United States should help to support a limited program of joint research, sited in Russia, which would involve the use of controlled technology for carefully selected and monitored basic research. Such uses of technology could then be expanded subsequently as confidence increased that the items previously made available had not been diverted. The initiation of a joint program of research would have many other advantages in addition to confidence-building, including the reduction of brain drain and the promotion of important scientific advances.
5. Both the Russian Federation and United States should explore the use of new verification technologies, such as remote monitoring of computer usage and bar-coding and laser scanning of controlled items, to verify compliance.
6. Both governments should promote maximum openness and transparency, including publication of pre-competitive research results on an unclassified basis, to build confidence and to avoid "technological surprise" that could re-ignite an arms race (e.g., in space-based defenses).
7. Because both countries may feel it necessary to retain an ability to reconvert some dual use industrial enterprises to

military production during times of impending hostility, the two governments should consider modalities to inform each other as to which enterprises have been identified for reconversion and under what circumstances.

Future Export Controls and Counter-Proliferation

As we noted earlier, a fundamental, continuing concern with respect to counter-proliferation is whether sufficient multilateral consensus exists--or can be developed--to deal effectively with this highly complex problem. Some effort has been devoted within CoCom to positioning that organization to begin to deal explicitly with counter-proliferation export controls, something that it has never done previously in its history. In November 1992, the CoCom countries convened the first meeting of the so-called CoCom Cooperation Forum (CCF), which includes virtually all of the republics of the FSU and the countries of East Europe. Notably absent, however, are China and Vietnam, largely at the insistence of the United States.

Although the CCF has not yet evolved beyond the stage of a "talking forum," we consider its establishment to be a useful development. If all potential supplier states were included, the CCF could, in principle, become an effective coordinating mechanism for the administration of multilateral counter-proliferation export controls. We do not believe, nor are we arguing, that it is necessary for the CCF to become, as some have suggested, a "supersecretariat" for the administration of multilateral controls. However, the current amalgam of counter-proliferation regimes--i.e., the MTCR for missiles (of a certain size, range and throwweight), the Australia Group for chemical weapons (soon to be supplanted by the Chemical Weapons Convention) and the Biological Weapons Convention--each with their own, non-identical group of member countries and varying degrees of cooperation and enforcement, is not adequate to the task at hand. Thus, we are convinced that some sort of coordinating mechanism, even if it only coordinates more closely the work of the separate regimes, is urgently needed.

There is also another, more conceptual problem, that must be addressed: the lack of a well articulated, fundamental strategy with respect to each of the areas of proliferation concern (i.e., nuclear, biological, chemical, missiles, advanced conventional, etc. How are we to decide who we are trying to prevent from getting what? The problem is that today's cooperating nation may become tomorrow's pariah state. Moreover, there is the question of whether the fundamental differences in the nature of the proliferation threat (versus the old Cold War threat) require us to reevaluate the existing philosophy that underlies the controls. Given the fact that some of the weapons of concern require relatively unsophisticated technology, does the focus on technology rather than end-products, as recommended nearly a decade ago in the so-called Bucy report, still make sense? And, if counter-proliferation controls must then be expanded to include less sophisticated and/or obsolescent technologies and end products, is such an approach feasible in the current world economic and political environment?

These serious doubts about the scope and nature of what must be controlled to effectively counter proliferation cause us to conclude that so-called "supply side" approaches--namely, the denial of technologies and products through export controls--have real limitations. Indeed, further expansion of a denial regime to include new proliferation-related items is, in our judgement, likely to be futile. Instead, attention should be focused increasingly on the "demand side" of the equation.

"Demand side" policy approaches would involve, first, active efforts to identify the specific reasons why nations feel compelled to acquire or develop WMDs--and then acting to eliminate or at least reduce these perceived, regional and other insecurities. Second, such approaches would seek to provide positive incentives through a variety of instruments (i.e., through foreign aid, export/import credits, technical assistance, and so on) to convince would-be proliferants that their larger economic and political interests are better served by renouncing attempts to acquire WMDs or advanced conventional weapons or, at the very least, by maintaining a policy of openness and disclosure. (It should be noted, in this regard, that the so-called Nunn-Lugar funds are intended to promote precisely this kind of transparency in the republics of the FSU.)

Where such "demand side" approaches fail, and where there is persuasive intelligence evidence of continued attempts to acquire or develop such weapons systems, export controls must be applied, preferably on a multilateral basis. In extreme cases, of course, where such "supply side" approaches also fail to halt the proliferation, there will be no alternative but to resort to the threatened or actual use of force in order to remove the threat to U.S. national security. The kind of "approval regime," which the Academies' panel advocated for those countries now subject to CoCom controls, would then _not_ be appropriate, since that approach is predicted on the existence of openness and transparency, and a willingness to permit verification of the actual end-use of the items subject to control. As we have witnessed in the case of post-war Iraq, obtaining the cooperation of a would-be proliferant country in verifying end use and in acting in an open and responsible manner is extremely difficult.

Implications for the Reauthorization of the EAA

The export control problem is so complex and multi-faceted that it would be unrealistic to attempt to address in the reauthorization of the Export Administration Act (EAA) all of the issues we have raised here. Indeed, Congress has in the past been mistaken, in our judgment, by attempting to be too ambitious in "micro-managing" the administration of export controls in the terms of the EAA. This became necessary in the past due, in part, to the gridlock caused by conflicting national priorities of the Cold War period (e.g., retarding Soviet military capability versus promoting U.S. exports). But we have now entered a different era, one that calls for a different legislative approach.

What is needed at the present time is for Congress to craft a new EAA that is both comprehensive and highly flexible in the authority it grants. The law should be fundamentally grounded in the notion that, in today's highly competitive global environment, where technology is diffusing rapidly through multiple channels, "supply side" policies emphasizing the denial of technology and end products can only hope to succeed if they are fully multilateral in nature. Thus, the new EAA should avoid reflexive, unilateral approaches to the greatest extent possible and should offer the Executive branch maximum flexibility in negotiating with other potential supplier nations. Similarly, the law should emphasize that the principal purpose of export controls is to promote U.S. national security, which must explicitly include the proliferation of WMDs, missile and other weapons delivery systems, and advanced conventional weapons, and which must also take account of economic considerations (i.e., the continued competitiveness of U.S. industry) as well. By implication, therefore, a new EAA should discourage the use of export controls as an instrument of unilateral U.S. foreign policy, except _in extremis_.

Beyond these fundamental philosophical principles, there is much that the new EAA can and should do to provide guidance to the

Executive branch regarding the further streamlining the U.S. export control regime. In this regard, we call attention once again to the findings and recommendations of the 1991 Academies' panel on this subject, which are summarized in the Executive Summary attached to this testimony (see pp. 34-38). In our judgment, these proposals remain essentially as valid (and unimplemented) today as they were when the report was released two years ago. Alone among the major countries participating in CoCom, the United States is hobbled by an almost impossibly complicated system of export control, replete with multiple, competing agency jurisdictions and conflicting policy objectives. The adoption of the report's proposals for a streamlined system would do much to address these problems and to provide the Executive branch with the flexibility and agility it needs to respond to rapidly changing political and economic conditions.

Above all, there is a need for Congress to act expeditiously. As you know well, Mr. Chairman, too often in the recent past the Legislative branch itself has been unable to reach agreement on a new EAA or to resist the temptation to try to use the rewrite of the law as a means to respond, inappropriately in our judgment, to the multitude of the serious foreign policy problems facing the United States. Indeed, during the previous administration, this resulted in the expiration of the EAA and the need to continue export control authority under the terms of the International Economic Emergency Powers Act (IEEPA). Now is the time, therefore, for Congress to act boldly and progressively by laying out a new blueprint for the administration of U.S. export controls, one that safeguards vital U.S. national security interests while also assuring U.S. industry that it will not be placed at a disadvantage in the increasingly competitive global market. The world has entered a new era in international relations, it is imperative that this reality now become embodied as well in the reauthorization of the Export Administration Act.

STATEMENT
to the
SUBCOMMITTEE ON ECONOMIC POLICY, TRADE AND ENVIRONMENT
COMMITTEE ON FOREIGN AFFAIRS
U.S. HOUSE OF REPRESENTATIVES

regarding

REAUTHORIZATION OF THE EXPORT ADMINISTRATION ACT

JOHN STEINBRUNER

of

THE BROOKINGS INSTITUTION

JUNE 23, 1993

I am pleased to be able to contribute to the Subcommittee's deliberations on the Export Administration Act. I do so on the basis of independent research regarding the national security aspects of the legislation. The views I will express have some standing in the professional community, but I present them solely as a matter of personal judgment. I do not attempt to represent the position of any institution or political organization.

I can summarize my perspective very briefly. I believe the Export Administration Act as the central element of the U.S. export control system should undergo a fundamental redesign. The export control arrangements that were legislated in 1979 and that have evolved incrementally since then no longer fit the circumstances. Many of the technologies most relevant to advance weapons application, particularly those based on electronic circuitry, have diffused so widely in the international market that categorical denial of access to any major country has become infeasible. Moreover, most of the countries once subjected to categorical discrimination have undergone radical political transformation, and it is no longer appropriate to treat them as presumed enemies. In particular all former members of the Warsaw Treaty Organization have abandoned confrontational policies and are attempting internal reform. United States interest in encouraging their constructive economic development now overrides the traditional objective of imposing constraints on their military capacity. In this altered world export controls for national security and for foreign policy purposes cannot be primarily based on the objective of denial. The only serious hope to control the dangerous process of proliferation is to induce cooperative restraint among all the major industrial economies reinforced by more extensively developed rules of disclosure.

Admittedly the shift from denial to disclosure as the basic method of export control will be difficult in conceptual and in emotional terms. It requires that traditional attitudes be altered and that political consensus be reformulated. The necessary effort is motivated, however, by some very strong reasons. A disclosure based arrangement would be more responsive to national security requirements under the new conditions that have emerged. It would also diminish interference with commercial trade and would enable more efficient administration. The potential for improvement in all three dimensions is bound to command serious attention.

EVOLUTION OF THE DENIAL STRATEGY

The current export control regime originated with the Export Control Act of 1949 enacted as the alliance confrontation of the Cold War period was forming. The United States was then undertaking the initial development of an array of new technologies destined to revolutionize the capacities of military forces, most notably nuclear explosives, jet aircraft, radar, space satellites and ballistic missiles. We were doing so in sharp technical and ideological competition with the Soviet Union, and we perceived an imminent threat of aggression. With this immediate danger in mind and with reasonable aspiration for preserving an immediate technical advantage, the original act provided for comprehensive export restrictions directed against communist countries in service of defense against deliberately calculated strategic attack.

Twenty years later, when the Export Administration Act of 1969 was enacted, the strategic confrontation with the Soviet Union was locked in place but had already matured to the point that some of its youthful intensity had been lost and some competing considerations were recognized. The 1969 act provided for the continuation of export restrictions in service of the established confrontational security objectives, but it encouraged practical qualifications. In the interest of protecting the U.S. trade position the act provided for the removal of restrictions on technologies and products that were readily available from sources outside effective U.S. control and similarly for products that had relatively minor consequence for military application.

A decade later the 1979 EAA reiterated the tension between established security considerations and economic interests and directed the implementing agencies to set a judicious balance. By then it was conceded that the Soviet Union had in fact mastered the full array of relevant technology but authority for imposing export controls was nonetheless continued in hopes of protecting marginal technical advantages and in order to exercise economic pressure on behalf of a broader set of foreign policy considerations. The 1979 EAA suggests that unilateral export controls not supported by other industrial countries are ineffective and are particularly damaging to U.S. commercial interests but gives leeway for persisting in unilateral efforts while seeking to induce other countries to adopt supporting restrictions.

Implementation of the EAA during the 1980s is generally considered to have weighed the confrontational security and foreign policy objectives more heavily than the countervailing economic interest in liberalized trade. Restrictions were expanded to an extensive list of dual-use items at technical thresholds well below the most advanced standards. The United States assertively pressured the other members of CoCom (the Coordinating Committee on Multilateral Trade) to tighten their relatively more relaxed enforcement practices. In response to Gorbachev's reforms and to the dissolution of the Soviet Union the control lists were significantly reduced and the thresholds for restriction were set closer to technical frontiers. Nonetheless the pattern of discriminatory restriction set by the Cold War confrontation still prevails. The most advanced computers and most advanced telecommunications equipment, for example, are not licensed for export to Russia or China despite general availability on the international market and despite their evident importance for economic development. Though it is conceded that denying the export of this equipment will not impose any decisive restriction on military capacity, residual distrust has prevented full liberalization.

NEW CONDITIONS

In the forty-four years that have elapsed since the Export Control Act of 1949 the international diffusion of technology has become extensive and weapons development programs are no longer at the frontiers of most fundamental technology. In general technical development is being driven by commercial application by corporations operating on a global scale. Competitive pressures and the emergent potential of advanced technology produce rapid product development cycles that the most sluggish weapons development programs cannot hope to match. The enormous expansion of telecommunications capability is producing massive international flows of information that national governments can only marginally restrict. This means that no country with significant assets that isintegrated into the international economic system can be denied access necessary to conduct successful weapons development programs if they chose to dedicate themselves to that task. It also means that countries that have not heretofore pursued major weapons development programs have some potential to leapfrog those that have simply by being more adroit at appropriating commercial technology. These trends have transformed the technical context of international security.

Since 1989 the military context has also been transformed. The opposing alliance system that inspired the export control regime has dissolved. All of its former members have changed their political and economic structures and have adopted accommodating policies. The residual military establishments that they maintain present an entirely different set of problems. In the most prominent example, some forty percent of the military assets once deployed by the Soviet Union are now held by Russia, including for the moment at least comprehensive control over all of the nuclear weapons. The Russian establishment preserves large capacities for long range destruction but has decisively lost the ability to mount an invasion of Western Europe. The threat of deliberate aggression it poses is minimal and the traditional objectives of deterrence and containment are not in question. The problem rather is that the Russian establishment or that of one of the other successor states might disintegrate to the extent that it could not be able to exercise responsible control over its deployed weapons and over the people who operate and manufacture them. The threat of internal disintegration is a fundamentally different security problem than the threat of deliberate aggression.

These two basic changes in circumstance -- the transformation of technology and of threat -- create international security imperatives starkly different from those that produced the EAA in its currently evolved form. The dominant principle structuring

United States relations with the other major military establishments is cooperative engagement rather than active confrontation. That principle now applies to all of the members of the UN Security Council. There is no other military establishment capable of conducting traditional aggression on short notice against the resistance of the United States and the international coalition we would be able to form. Though we still do our military planning with reference to unspecified contingencies of this sort, our actual security problems have to do with the longer term consequences of technical diffusion. Modern technology is providing substantial potential to small states and sub-state actors who believe they have reason to resist an international order based on the rule of law. They could not conduct a classic military operation to seize and hold territory, but they could seriously disrupt vital economic activities. They could also produce large casualties among concentrated urban populations. The international community clearly needs a new form of security organization to protect against this type of threat. Export controls under a new design are likely to be an element of such an arrangement.

NEW DESIGN

The basic idea of a new export control arrangement designed for new international conditions is to create a formulating and enforcing coalition that includes all the major weapons producers (to a first approximation the permanent members of the UN Security

Council) and all the major industrial economies. The arrangement would facilitate access to advanced technology for commercial purposes in exchange for an agreement not to apply it to weapons development. Export of dual-use technology would be generally allowed to countries that accept the arrangement, but there would be strict rules of disclosure and criminal sanctions taken against individuals and organizations that violated the disclosure requirements. Thus most items currently on the control lists could be shipped for legitimate commercial purposes without prior approval, but they would have to be unalterably labeled at the point of production, any transfer recorded, and their end-use specified. Production, shipment and end-use information would have to be reported to a central registry. For particularly sensitive items the designated end-use would be routinely monitored. For any item enabling provisions would be made for verification of the registry information.

There are several important features of an arrangement based on disclosure. By making normal commercial trade transparent, it would create a background against which it would be easier to detect and trace systematic violations -- that is, illicit weapons development projects. By removing the burden of monitoring all relevant trade in advance, it would increase the ability of enforcement agencies to concentrate on problematic activities and would give them a dramatically improved information base for tracking such activities. Under such an arrangement willful violators would face a much greater chance of being detected, and the sanctions for being caught would be more severe.

For commercial producers the regulatory burdens of an arrangement based on disclosure would be substantially less. The information they would be required to report is integral to doing business, and they would be relieved of the current licensing procedures. They would have to be given assurances that the registry would not compromise legitimate proprietary information, but there is precedent for such reassurance. As long as they complied with end-use regulations and disclosure rules, the government would not interfere in their trade relationships.

Disclosure cannot be substituted for direct licensing for all items currently restricted. For some things, most notably fissionable materials (Plutonium and highly enriched Uranium), it will be necessary and feasible to restrict access indefinitely. Moreover, I would concede that the momentum of the past will probably extend direct licensing and hence the denial strategy somewhat beyond the list of items for which it is both necessary and realistic. I believe it is vitally important, however, to pursue systematic and comprehensive cooperation among major supplier and to introduce disclosure rules as the principal method of generalized export controls. Without such a shift in strategy and design, we will assuredly loose control over weapons proliferation and will generate potential unmanageable security problems.

For those who have difficulty appreciating this argument, I urge them to contemplate the situation with regard to biotechnology. Its development is integral to medical science. Its materials and information are necessarily a matter of easy public access. The progress of basic science and available technology in this area has made the production of extremely dangerous agents entirely feasible. As the appearance and appalling spread of the AIDS virus and more recently of drug resistant strains of tuberculosis have made apparent, natural evolution is readily capable of producing severe threats to human populations. Deliberately destructive individuals and organizations can do so as well, and the equipment and information they would need is not burdensome to assemble. In order to cope with this situation we must have much more systematic international cooperation and more comprehensive monitoring than we currently have. Many dual-use technologies present lesser cases of the same problem.

STATEMENT

OF
JERRY J. JASINOWSKI
PRESIDENT
NATIONAL ASSOCIATION OF MANUFACTURERS

ON
REFORM OF EXPORT CONTROL SYSTEM

BEFORE THE
SUBCOMMITTEE ON ECONOMIC POLICY, TRADE AND ENVIRONMENT
COMMITTEE ON FOREIGN AFFAIRS
U.S. HOUSE OF REPRESENTATIVES

JUNE 23, 1993

I appreciate the opportunity to testify today on the issue of U.S. export control policies as they apply to commercial goods. I am accompanied by Chris Padilla, General Manager, Federal Government Affairs, AT&T, and by Howard Lewis, Vice President, International Economic Affairs, National Association of Manufacturers (NAM).

Since 1987, exports have accounted for about 45 percent of the real economic growth in this country. Today, 7 million Americans owe their jobs to exports and a study last year by the USTR found that the wages connected with these jobs are 17 percent higher than the average industrial wage in this country. In many of our leading industries, a substantial share of domestic output is exported--40 percent in semiconductors, 50 percent in aircrafts, 35 percent in computers, and 30 percent in industrial/analytical instruments. Exports, in short, are key to economic growth and good jobs in this country.

Many people recognize this fact and, over the past several years, we have heard a lot of rhetoric about the need to reorganize national priorities to emphasize the growing importance of our international economic and commercial interests. So far, this rhetoric hasn't translated into much concrete action. I see this Subcommittee as trying to change this situation in regard to an important issue for U.S. business--the fundamental reform of the U.S. export control system as it applies to commercial goods and technology. In a 1992 NAM survey of top U.S. exporters who regularly deal with the control system, 90 percent of the respondents rated this issue as "important" or "very important" to their companies.

Let's assume for a moment that you are a U.S. manufacturer and have just signed a contract overseas. Perhaps you are a small company, new to international business, and have answered your government's call to help spur growth and jobs in the United States by exporting. You discover that you need a validated export license to ship your product. So you pore through this document, the 1,500 pages of U.S. Export Administration Regulations, to find out what you need to do.

From the point of view of you, the exporter, this (chart #1) is what you see. You fill out an export license application and send it to the Commerce Department. In a few weeks, or maybe a few months, you'll get an answer back, or maybe a request for more information.

This (chart #2) is what happens in between. Your application goes into the hellish maze that is today's U.S. export control system. In this system, we find five Cabinet departments, four interagency working groups, three interagency escalation groups, three different intelligence agencies, two independent agencies, at least three enforcement entities, the Joint Chiefs of Staff, the National Security Council, the National Economic Council, and ultimately, the President himself. It's impossible to know how many people work inside this maze, because the export control bureaucracy--like the technology it deals with--is proliferating rapidly.

Estimates vary as to what this system costs the United States. Six years ago, the National Academy of Sciences (NAS) calculated that 50 percent of U.S. manufactured exports had to go through the export control maze, and that over $9 billion of exports were lost as a result of controls. A recent NAM survey of leading exporters suggests that even after the end of the Cold War, 30-40 percent of U.S. exports still need some form of prior written government approval. A major research institute is in the final phase of a study which indicates that our control policies may be even more costly than estimated by NAS.

Mr. Chairman, this system is more than just broken. It is inefficient, costly to our economy, and ineffective in controlling access to technologies which could pose a threat to national security. It needs to be rebuilt from the ground up.

To that end, a group of large and small exporters formed at NAM more than 18 months ago to consider the fundamental reform of U.S. export controls. The result is a completely new law written by the business community as a call to action. I am submitting a discussion draft of our legislation for the record. I'd like to spend some time today telling you what our proposal does, what it does not do, and how it differs from today's system.

The most important premise of the NAM proposal is that export controls on commercial goods and technology, including non-proliferation controls, must be applied multilaterally. History shows that cooperation between supplier countries can succeed in denying critical technologies to countries and people who ought not to have them. Absent multilateral agreement, export controls are ineffective and hurt only U.S. exporters.

Under our proposal, the United States must restrict exports of commercial goods and technology through multilateral agreements, such as COCOM, the Missile Technology Control Regime (MTCR), the Australia Group, or the Nuclear Suppliers Group, to countries or endusers greed to by these multilateral regimes. The U.S. and its allies would adopt common policies on exports to countries which don't belong to a control regime, and would cooperate in imposing sanctions when necessary.

Recognizing that it is often difficult to achieve multilateral agreement, our proposal creates incentives for countries to join export control regimes. Today, there are five major export control regimes. Each covers different technologies and operates according to different procedures. Some are more effective than others, but there are few incentives for countries to join any of them.

The NAM proposal would offer preferential treatment to countries that agree to participate in control regimes by creating a "license-free zone" for trade among members of effective regimes. This would facilitate U.S. trade with responsible members of the international community, and give countries that don't currently abide by technology control agreements a reason to sign up.

To facilitate negotiations, we would establish an 18-month transition period when existing controls would be grandfathered while the Administration seeks multilateral agreement on controlled countries, endusers, and commodities. This process of international negotiation will, quite naturally, lead to restrictions on a relatively small number of truly sensitive "chokepoint" technologies which can be realistically controlled. This is critical, because excessively long control lists only spur resistance from our allies, and thus ultimately hinder the effectiveness of control regimes.

What if multilateral agreement cannot be reached? Should the U.S. retain its ability to control exports unilaterally? This is a difficult question, because unilateral export controls impose tremendous costs on the U.S. economy that are not shared by our allies, and do little to prevent adversaries from gaining sensitive technologies. Yet sometimes international emergences might require the use of economic sanctions. The NAM proposal balances these concerns by imposing strict discipline on the use of unilateral export controls.

This approach borrows heavily from existing law governing controls on agricultural exports. It preserves discretionary authority for the President to use economic sanctions, and leaves open an avenue for the executive to impose strong embargoes on truly outlaw regimes. It requires the involvement and consent of Congress to perpetuate limited unilateral controls, which are the most damaging to U.S. competitiveness. And it requires some tough but necessary decisions on balancing diplomatic "signal-sending" with U.S. economic interests.

Next the NAM proposal turns to the important question of how export licensing should be handled inside the U.S. government. When you look at today's system what is especially notable is the lack of clear responsibility or accountability. Who has the final responsibility for deciding on an export license? Today, it's often the White House. Who is accountable when something goes wrong? Today, agencies point fingers at each another.

Our proposal establishes clear responsibility and accountability for export control decision making, and balances the need for certain agencies to provide policy input against the need for efficient export licensing. Our proposal establishes a Commercial Export Control Policy Committee, consisting of the Secretaries of Commerce, Defense, State, and Energy and other key agencies, to establish broad policy, monitor the operation of the control system and resolve major disputes among agencies.

Our bill would consolidate routine authority to license commercial exports in the Department of Commerce. A revitalized agency within Commerce, called the Commercial Export Control Administration (CECA), would be established and the President would be given broad discretion to transfer personnel into this agency as necessary. It would be held solely accountable for regulating commercial exports in accordance with the policies established by the inter-agency policy committee. On commercial export licenses, CECA could consult with other agencies as appropriate, but all license consideration would have to be completed within 30 days and CECA would have responsibility for deciding whether applications should be approved.

In this area, our legislation closely tracks the recommendations of reorganization of the export control system of the 1991 National Academy of Sciences report, *Finding Common Ground.*

Our proposal does not transfer the licensing of munitions items, such as combat aircraft, tanks, or assault rifles, into the Commerce Department. These would remain under the jurisdiction of the State Department. But commercial items currently on the State Department's Munitions List--such as commercial software with encryption capabilities and civil aircraft--would come under exclusive Commerce Department jurisdiction.

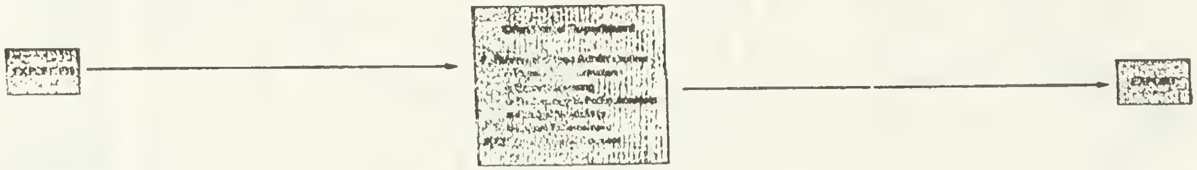
Finally, our bill would improve the clarity and transparency of the export control system. To be effective, an export control system must publicly identify which commodities, countries, and endusers are controlled. But today, licenses can be required for destinations not designated on any control list, or which appear on lists the United States refuses to publish. Any commodity, even a pencil or paper napkin, requires a license if an exporter knows or is deemed to know that his customer is involved in producing weapons of mass destruction.

This "catch-all" provision is particularly pernicious. It is not reasonable to expect an exporter, particularly a small firm which may not even have an overseas office, to "know" something of which the vast intelligence apparatus of the U.S. government is ignorant. Because the catch-all provision is so broad, it has the principal effect not of stemming proliferation, but rather of shifting regulatory and intelligence-gathering responsibilities--and all the blame for failures--away from government and onto hapless exporters.

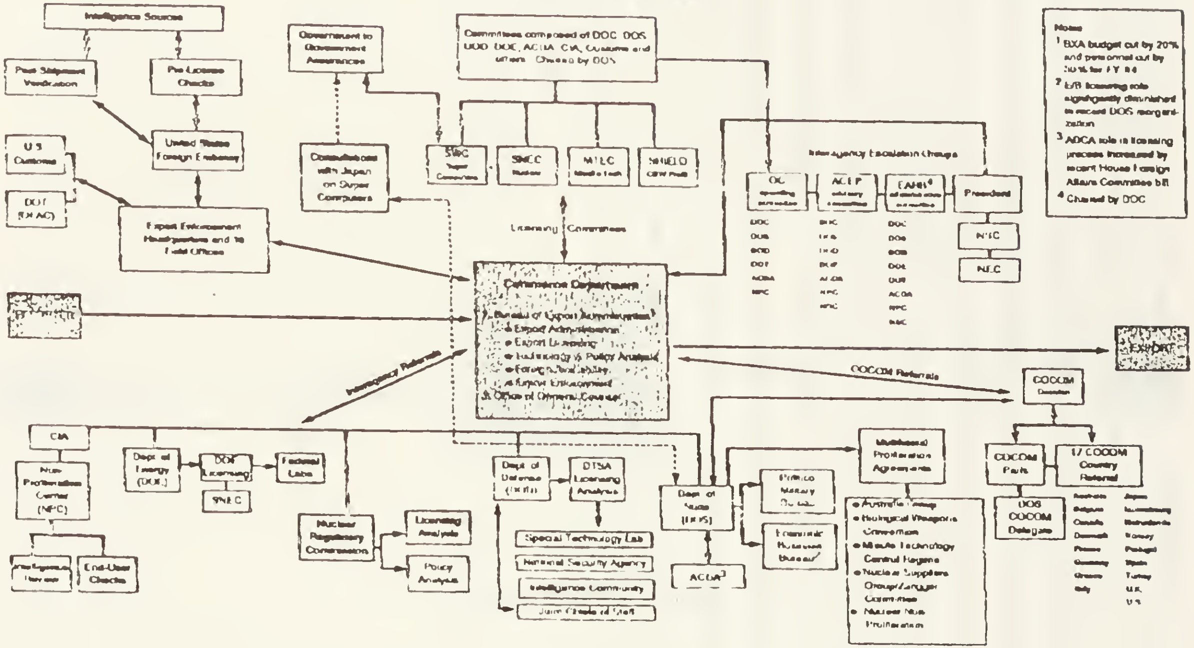
The NAM alternative is simple. Specific goods, technologies, countries, and endusers which are published in the "Export Control Index" would require a validated export license. Absent such a specific designation, no permission or authority to export would be required.

Mr. Chairman, that is the essence of the NAM proposal for fundamental reform. It is much more than a ritualistic call for de-control. It is a responsible, detailed proposal designed to tackle the tough problems of a new world. It borrows heavily from the recommendations of many independent groups which have studied this issue, including the National Academy of Sciences. It will strengthen U.S. national security, an important component of which is economic competitiveness. And most importantly, it will keep sensitive technologies out of the hands of people who ought not to have them without standing in the way of legitimate commercial exports.

Export Control System—Chart 1



Export Control System—Chart 2


Intelligence Sources
Post Shipment Verification
Pre-License Checks
United States Foreign Embassy
U.S. Customs
DOT (FAA)
Export Enforcement Headquarters and its Field Offices
Government to Government Assurances
Consultations with Japan on Super Computers
Committees composed of DOC, DOS, DOD, DOE, ACDA, CIA, Customs and others. Chaired by DOS
SSC Super Computers
SNEC Nuclear
MTCC Missile Tech
SHIELD CBW Prolif
Licensing Commitees
Interagency Escalation Change
OC operating committee
ACEP advisory committee
EARB⁴ all cabinet advisory committee
President
NSC
NEC
DOC DOS DOD DOT ACDA NPC
DOC DOS DOD DOE ACDA NPC NSC
DOC DOS DOD DOE DOT ACDA NPC NSC
Commerce Department
1. Bureau of Export Administration¹
• Export Administration
• Export Licensing
• Technology & Policy Analysis
• Foreign Availability
• Export Enforcement
2. Office of General Counsel
EXPORTER
EXPORT
COCOM Referrals
Interagency Referrals
COCOM Decision
COCOM Paris
17 COCOM Country Referral
DOS COCOM Delegate
Australia
Belgium
Canada
Denmark
France
Germany
Greece
Italy
Japan
Luxembourg
Netherlands
Norway
Portugal
Spain
Turkey
U.K.
U.S.
CIA
Non-Proliferation Center (NPC)
Intelligence Review
End-User Checks
Dept of Energy (DOE)
DOE Licensing
SNEC
Federal Labs
Nuclear Regulatory Commission
Licensing Analysis
Policy Analysis
Dept of Defense (DOD)
DTSA Licensing Analysis
Special Technology Lab
National Security Agency
Intelligence Community
Joint Chiefs of Staff
Dept of State (DOS)
ACDA³
Politico Military Bureau
Economic Business Bureau²
Multilateral Proliferation Agreements
• Australia Group
• Biological Weapons Convention
• Missile Technology Control Regime
• Nuclear Suppliers Group/Zangger Committee
• Nuclear Non-Proliferation
Notes
¹ BXA budget cut by 20% and personnel cut by 30% for FY 94
² E/B licensing role significantly diminished in recent DOS reorganization
³ ACDA role in licensing process increased by recent House Foreign Affairs Committee bill
⁴ Chaired by DOC

103D CONGRESS
1ST SESSION

H. R. ____

IN THE HOUSE OF REPRESENTATIVES

Mrs. UNSOELD (for herself, Ms. CANTWELL, Mr. DEFAZIO, Mr. DICKS, Ms. DUNN, Ms. FURSE, Mr. HAMBURG, Mr. INSLEE, Mr. KOPETSKI, Mr. KREIDLER, Mr. LAROCCO, Mr. MCDERMOTT, Mr. SMITH of Oregon, Mr. SWIFT, Mr. WILLIAMS, and Mr. WYDEN) introduced the following bill; which was referred to the Committee on ______________

A BILL

To amend the Forest Resources Conservation and Shortage Relief Act of 1990 to permit States to adopt timber export programs, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Forest Resources Conservation and Shortage Relief Amendments Act of 1993".

SEC. 2. RESTRICTION ON EXPORTS OF UNPROCESSED TIMBER FROM STATE AND OTHER PUBLIC LANDS.

Section 491 of the Forest Resources Conservation and Shortage Relief Act of 1990 (16 U.S.C. 620c) is amended—

(1) in subsection (a)—

(A) by striking "(e)" and inserting "(g)"; and

(B) by striking "in the amounts specified" and inserting "as provided";

(2) in subsection (b)—

(A) in paragraph (1)—

(i) by inserting ", notwithstanding any other provision of law," after "prohibit"; and

(ii) by striking "not later than 21 days after the date of the enactment of this Act" and inserting ", effective June 1, 1993";

(B) in paragraph (2)—

(i) by striking subparagraph (A) and inserting the following new subparagraph:

"(A) The Secretary of Commerce shall issue an order referred to in subsection (a) to prohibit, notwithstanding any other provision of law, the export of unprocessed timber originating from public lands, effective during the period beginning on June 1, 1993, and ending on December 31, 1995.";

(ii) by striking subparagraphs (B) and (C); and

(iii) in subparagraph (D)—

(I) by redesignating such subparagraph as subparagraph (B); and

(II) by striking "total annual sales volume" and inserting "annual sales volume in that State of unprocessed timber originating from public lands";

(C) in paragraph (3)—

(i) by redesignating such paragraph as paragraph (4); and

(ii) by striking "States pursuant to this title" and inserting "the Secretary of Commerce pursuant to this title and the effectiveness of State programs authorized under subsection (d)"; and

(D) by inserting after paragraph (2) the following new paragraph:

"(3) PROHIBITION ON SUBSTITUTION.—

"(A) PROHIBITION.—Subject to subparagraph (B), each order of the Secretary of Commerce under paragraph (1) or (2) shall also prohibit, notwithstanding any other provision of law, any person from purchasing, directly or indirectly, unprocessed timber originating from public lands in a State if—

"(i) such unprocessed timber would be used in substitution for exported unprocessed timber originating from private lands in that State; or

"(ii) such person has, during the preceding 24-month period, exported unprocessed timber originating from private lands in that State.

"(B) EXEMPTION.—The prohibitions referred to in subparagraph (A) shall not apply in a State on or after the date on which—

"(i) the Governor of that State provides the Secretary of Commerce with notification of a prior program under subparagraph (C) of subsection (d)(2),

"(ii) the Secretary of Commerce approves a program of that State under subparagraph (A) of subsection (d)(2), or "(iii) regulations of the Secretary of Commerce issued under subsection (c) to carry out this section take effect,

whichever occurs first.";

(3) by redesignating subsections (e) through (j) as subsections (g) through (l), respectively; and

(4) by striking subsections (c) and (d) and inserting the following:

"(c) FEDERAL PROGRAM.—

"(1) ADMINISTRATION BY THE SECRETARY OF COMMERCE.—

"(A) IN GENERAL.—Subject to subparagraph (B), the Secretary of Commerce shall, as soon as possible after the date of the enactment of the Forest Resources Conservation and Shortage Relief Amendments Act of 1993—

"(i) determine the species, grades, and geographic origin of unprocessed timber to be prohibited from export in each State that is subject to an order issued under subsection (a);

"(ii) administer the prohibitions consistent with this title;

"(iii) ensure that the species, grades, and geographic origin of unprocessed timber prohibited from export within each State is representative of the species, grades, and geographic origin of timber comprising the total timber sales program of the State; and

"(iv) issue such regulations as are necessary to carry out this section.

"(B) EXEMPTION.—The actions and regulations of the Secretary under subparagraph (A) shall not apply with respect to a State that is administering and enforcing a program under subsection (d).

"(2) COOPERATION WITH OTHER AGENCIES.—The Secretary of Commerce is authorized to enter into agreements with Federal and State agencies with appropriate jurisdiction to assist the Secretary in carrying out this title.

"(d) AUTHORIZED STATE PROGRAMS.—

"(1) AUTHORIZATION OF NEW STATE PROGRAMS.—Notwithstanding subsection (c), the Governor of any State may submit a program to the Secretary of Commerce for approval that—

"(A) implements, with respect to unprocessed timber originating from public lands in that State, the prohibition on exports set forth in the Secretary's order under subsection (a); and

"(B) ensures that the species, grades, and geographic origin of unprocessed timber prohibited from export within the State is representative of the species, grades, and geographic origin of timber comprising the total timber sales program of the State.

"(2) APPROVAL OF STATE PROGRAMS.—

"(A) PROGRAM APPROVAL.—Not later than 30 days after the submission of a program under paragraph (1), the Secretary of Commerce shall approve the program unless the Secretary finds that the program will result in the export of unprocessed timber from public lands in violation of this title and publishes that finding in the Federal Register.

"(B) STATE PROGRAM IN LIEU OF FEDERAL PROGRAM.—If the Secretary of Commerce approves a program submitted under paragraph (1), the Governor of the State for which the program was submitted, or such other official of that State as the Governor may designate, may administer and enforce the program, which shall apply in that State in lieu of the regulations issued under subsection (c).

"(C) PRIOR STATE PROGRAMS.—Not later than 30 days after the date of the enactment of the Forest Resources Conservation and Shortage Relief Amendments Act of 1993, the Governor of any State that had, before May 4, 1993, issued regulations under this subsection as in effect before May 4, 1993, may provide the Secretary of Commerce with written notification that the State has a program that was in effect on May 3, 1993, and that meets the requirements of paragraph (1). Upon such notification, that State may administer and enforce that program in that State until the end of the 9-month period beginning on the date on which the Secretary of Commerce issues regulations under subsection (c), and that program shall, during that 9-month period, apply in that State in lieu of the regulations issued under subsection (c). Such Governor may submit, with such notification, the program for approval by the Secretary under paragraph (1).

"(e) PRIOR CONTRACTS.—Nothing in this section shall apply to—

"(1) any contract for the purchase of unprocessed timber from public lands that was entered into before October 24, 1990; or

"(2) any contract under which exports of unprocessed timber were permitted pursuant to an order of the Secretary of Commerce in effect under this section before October 23, 1992.

"(f) WESTERN RED CEDAR.—Nothing in this section shall be construed to supersede section 7(i) of the Export Administration Act of 1979 (50 U.S.C. App. 2406(i)).".

SEC. 3. MONITORING AND ENFORCEMENT.

(a) MONITORING.—Section 492(a) of the Forest Resources Conservation and Shortage Relief Act of 1990 (16 U.S.C. 620d(a)) is amended—

(1) paragraph (1), by striking "and" at the end of the paragraph;

(2) in paragraph (2), by striking the period at the end of the paragraph and inserting a semicolon; and

(3) by adding at the end the following new paragraphs:

"(3) each person who acquires, either directly or indirectly, unprocessed timber originating from public lands in a State that is subject to an order issued by the Secretary of Commerce under section

491(a), other than a State that is administering and enforcing a program under section 491(d), shall report the receipt and disposition of the timber to the Secretary of Commerce, in such form as the Secretary may by rule prescribe, except that nothing in this paragraph shall be construed to hold any person responsible for reporting the disposition of any timber held by subsequent persons; and

"(4) each person who transfers to another person unprocessed timber originating from public lands in a State that is subject to an order issued by the Secretary of Commerce under section 491(a), other than a State that is administering and enforcing a program under section 491(d), shall, before completing the transfer—

"(A) provide to such other person a written notice, in such form as the Secretary of Commerce may prescribe, that shall identify the public lands from which the timber originated; and

"(B) receive from such other person—

"(i) a written acknowledgment of the notice, and "(ii) a written agreement that the recipient of the timber will comply with the requirements of this title,

in such form as the Secretary of Commerce may prescribe; and

"(C) provide to the Secretary of Commerce copies of all notices, acknowledgments, and agreements referred to in subparagraphs (A) and (B).".

(b) CIVIL PENALTIES.—Section 492(c) of the Forest Resources Conservation and Shortage Relief Act of 1990—

(1) in paragraph (1)—

(A) by inserting "(A)" before "If the Secretary"; and

(B) by adding at the end the following:

"(B)(i) Subject to clause (ii), if the Secretary of Commerce finds, on the record and after an opportunity for a hearing, that a person, with willful disregard for the restrictions contained in an order of the Secretary under section 491(a) on exports of unprocessed timber from public lands, exported or caused to be exported unprocessed timber originating from public lands in violation of such order, the Secretary may assess against such person a civil penalty of not more than $500,000 for each violation, or 3 times the gross value of the unprocessed timber involved in the violation, whichever amount is greater.

"(ii) Clause (i) shall not apply with respect to exports of unprocessed timber originating from public lands in a State that is administering and enforcing a program under section 491(d)."; and

(2) in paragraph (2)—

(A) by redesignating subparagraphs (A), (B), and (C) as clauses (i), (ii), and (iii), respectively;

(B) by inserting "(A)" before "If the Secretary"; and

(C) by adding at the end the following:

"(B)(i) Subject to clause (ii), if the Secretary finds, on the record and after an opportunity for a hearing, that a person has violated, on or after June 1, 1993, any provision of this title or any regulation issued under this title relating to the export of unprocessed timber originating from public lands (whether or not the violation caused the export of unprocessed timber from public lands in violation of this title), the Secretary may assess against such person a civil penalty to the same extent as the Secretary concerned may impose a penalty under clause (i), (ii), or (iii) of subparagraph (A).

"(ii) Clause (i) shall not apply with respect to unprocessed timber originating from public lands in a State that is administering and enforcing a program under section 491(d).".

SEC. 4. SEVERABILITY.

If any provision of this Act or the amendments made by this Act, or the application thereof to any person or circumstance is held invalid, the remainder of this Act and such amendments and the application of such provision to other persons not similarly situated or to other circumstances shall not be affected by such invalidation.

○

BOSTON PUBLIC LIBRARY
3 9999 05981 672 6

ISBN 0-16-041703-1

90000

9 780160 417030